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A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

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Biological & Medical Serials

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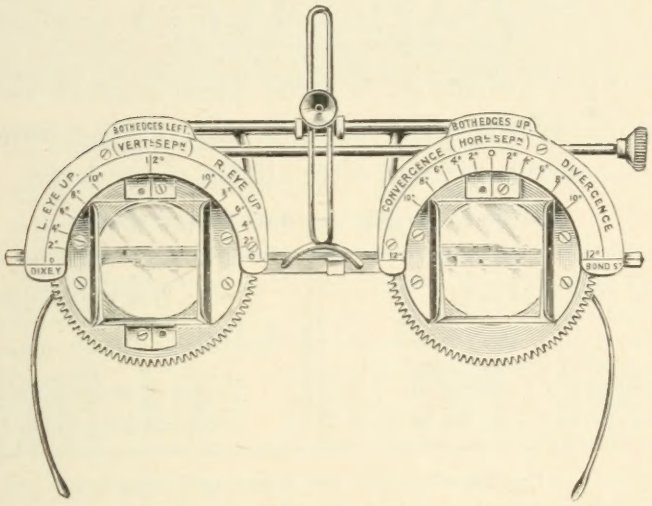

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CONTENTS.

Original Communications—

1. Sydney Stephenson, M.B.—On the Diagnosis of Tuberculous Affections of the Eye by the Calmette Serum Reaction 686
2. Leslie Buchanan, M.D.—On two cases of Family Degeneration of the Cornea 698
3. Thomson Henderson, M.D.—On so-called Filtering Cicatrices in the Treatment of Glaucoma 701

Clinical, Pathological, and Therapeutic Memoranda—

1. T. Harrison Butler, M.D.—A Conjunctival Cyst of Unusual Size ... 706
2. R. A. Chisolm, M.B.—Note on a Case of Fatal Subcutaneous Hæmorrhage in a New-born Child 708
3. Rosa Ford, M.B.—A case of Congenital Coloboma of the Eyelid ... 709

Novelties—

1. An Improved Retinoscopical Mirror 711

Translation—

Dr. Bruno Wolff.—Injuries to the Eyes of the Child During Labour ... 712
(*Continued.*)

Current Literature—

I. The Pathology and Treatment of Myopia 719
II. Saprophytes in Ocular Infections 721
III. Ophthalmoscopic Examination of the Ciliary Region 722
IV. Lumbar Puncture in Optic Neuritis 723
V. Ruptures in Descemet's Membrane 724
VI. Glanders of the Eye 725
VII. Ophthalmia Neonatorum 729
VIII. Tuberculosis and Eye Disease 732
IX. Anæsthesia, Local and General 735
X. Ring Scotoma 737
XI. Spring Catarrh... 738
XII. Treatment 742
XIII. Appliances 746

Reviews 752

Notes and Echoes 761

ORIGINAL COMMUNICATIONS.

ON THE DIAGNOSIS OF TUBERCULOUS AFFECTIONS OF THE EYE BY THE CALMETTE SERUM REACTION.

BY

SYDNEY STEPHENSON, M.B.,

LONDON, ENGLAND.

Introduction.

Apart from lesions of the eye usually accounted tuberculous, there are others, more especially scleritis, chronic uveitis, and some forms of choroiditis, the tuberculous origin of which is still in dispute. Years ago v. Michel[1] insisted that many cases of iritis were due to tubercle. Dr. George Carpenter and myself[2] have endeavoured to show that tubercle is a commoner cause of choroiditis than is usually believed. These, and various other conditions, have been ably discussed in a recent communication by Dr. W. Stock[3], who approached the problem of causation mainly from the experimental standpoint. As the result of his researches, Stock concluded that tubercle played no inconsiderable *rôle* in the causation of the diseases mentioned, as well as in some others, such as interstitial keratitis, phlyctenular ulcers, and so forth. Indeed, the important part undoubtedly taken by syphilis in the production of many eye diseases has tended to make some of us perhaps a little oblivious to the influence of other causes, amongst which tuberculosis is almost certainly one of the most important.

The non-recognition of tubercle as a common cause of internal eye disease is doubtless due largely to the clinical difficulty of diagnosing tuberculous lesions when small or deeply-seated—as, for example, in the bronchial or mesenteric glands. In such circumstances, physical examination, no matter how carefully carried out, often leaves us in doubt as to whether a patient is or is not tuberculous. Physical signs are present in a minority only of cases of tuberculosis of the bronchial glands, and examination by X-rays is likely to succeed only when the changes are of a gross nature. If the condition be dormant, as it often is, then other symptoms, as anæmia, persistent pyrexia, tachycardia, intractable dyspepsia, dyspnœa, spasmodic cough, and loss of flesh, will be conspicuous by their absence. A systematic record of pulse and temperature would be helpful only when the tuberculous lesion was producing its toxins, and could clearly afford no aid in the commoner cases of latent tuberculous foci.

During recent years diagnosis of what is sometimes spoken

of as the "pre-tuberculous state" has been simplified by the introduction of tuberculin inoculation, although its applicability is hedged around with certain restrictions. Among the more important of these are the necessity of confining the patient to bed, or, at all events, to the house; the methodical taking of temperature; and last, but not least, the estimation of the opsonic index for tubercle, which now appears to be thought necessary by some British authorities. The last point forms a serious objection to anything approaching a general adoption of the tuberculin test, since the complex processes involved in the estimation of the index, difficult and tedious enough to carry out even in a well-staffed hospital, become simply out-of-the-question in private practice.

Matters are comparatively simple when the patient manifests bunches of enlarged glands in his neck or elsewhere, and the diagnostic value of this evidence is accentuated when anatomically unrelated groups of glands share in the change, for which no obvious and adequate cause can be made out. Dr. C. Stedman Bull[4] has lately stated that enlarged glands are present in about 85 per cent. of the cases of anterior tuberculosis of the eye.

A history of tubercle in the patient's family cannot be held to count for a great deal when it is remembered that such a history can be obtained in about one-half of all cases brought to a children's hospital for treatment. Apart from this practical consideration, the family inheritance of tubercle does not nowadays rank so highly from a diagnostic point of view as it did a few years ago.

It has recently been found by C. v. Pirquet[5] that in tuberculous subjects, vaccination of the skin with tuberculin produces a local reaction, marked by redness, swelling, and papulation, coming on in from twenty-four to forty-eight hours after the little operation.* The papule, which is the diagnostic element of reaction, averages 10 mm. in diameter, and may be combined with vesicles or pustules. It is replaced in the course of several days or weeks by a pigmented spot in the skin. This state of things, which, as a rule, does not last longer than eight days, has become widely known as the "cuti-reaction," a name bestowed upon it by Vallée.[6] The reaction appears to be specific in the sense that it occurs only in tuberculous subjects. Among 113 infants, it was obtained in 5, and of that number 3 subsequently died, and tuberculosis was found at the autopsy. Among 80 tuberculous children the reaction was elicited in all but 11, and

* Lignières (*Académie des Sciences*, 21 and 28 October, 1907) has pointed out that scarification of the skin is not indispensable for the production of the cuti-reaction. The latter is set up if the skin be rubbed with pure tuberculin, especially if it be shaved immediately before. In tuberculous subjects the characteristic local reaction appears, as a rule, from the twenty-fourth hour.

most of these were in the last stages of disease, when it is notorious that reaction often fails to follow even the injection of tuberculin.

A word as to details.—Koch's *Alttuberculin* is employed diluted with one part of a 5 per cent. solution of carbolic acid in glycerine and 2 parts of physiological salt solution, and the skin on the outer side of the arm is selected as the point of inoculation. Two drops of the diluted tuberculin are allowed to fall on the skin, previously sterilised in the usual way, and the skin is then superficially penetrated by means of a small instrument, the point of which can be rendered sterile in a spirit flame. No dressing is applied, but care must be taken not to wipe away the tuberculin before it has dried.

More recently still, Professor A. Calmette[7], director of the Pasteur Institute at Lille, France, has announced that tuberculosis may be diagnosed by the simple expedient of placing in one eye a single drop of a 1 per cent. aqueous solution of dried tuberculin.* In healthy subjects no reaction whatever follows the application. Tuberculous individuals, on the contrary, show a local reaction, now widely known as the "ophthalmo-reaction." Thus, three to six hours after the tuberculin has been used, the semilunar fold and caruncle become reddened and the eye becomes congested, and the latter, before long, presents the signs familiar to every medical man as those characteristic of a more or less pronounced acute infective ("catarrhal") conjunctivitis. Chemosis is not present. Reaction attains its height in from six to ten hours, and disappears after eighteen hours in the child, and from twenty-four to thirty-six hours in the adult. The discomfort produced by the application is trifling. The patient's general state and appetite remain unaffected. It is of interest to note that there is no relationship between the intensity of the reaction, on the one hand, and the gravity of the tuberculous lesions, on the other.

From a second communication by Calmette[8] we learn that of 25 subjects to whose eyes tuberculin was applied, a positive reaction was obtained in 16, and of these 13 were known to be tuberculous. Reaction was negative in 9 subjects affected with non-tuberculous lesions.

In a third communication Calmette[9] states that since his first publication in *La Presse Médicale* more than a thousand trials of tuberculin have been made by hospital physicians in Paris and elsewhere, and that all the observations go to prove

*By one of those singular coincidences that are not peculiar to medicine, Calmette's idea was forestalled by Dr. Alfred Wolff-Eisner, who during a discussion on v. Pirquet's "cuti-reaction" at the Berlin Medical Society on May 15th, 1907, proposed to diagnose tuberculosis by dropping a 10 per cent. solution of tuberculin into the patient's eye. But he does not appear to have put his suggestion into action. Calmette's original paper was published on June 19th, 1907.

that the ophthalmo-reaction can be elicited in every form of tuberculosis, unless the patient be moribund or nearly so.

Calmette's results have been confirmed by many observers, including Letulle,[10] Comby,[11] Dufour and Bruslé,[12] Painblan and Petit,[13] Prouff,[14] Grasset and Rimbaud,[15] Sicard and Descamps,[16] Montagnon,[17] Bazy,[18] Métraux,[19] Lépine,[28] and Austin and Grünbaum.[29] After perusing the various communications that have been published on the ophthalmo-reaction, it is impossible to resist the conclusion that Calmette has endowed us with a simple, trustworthy, and harmless means of *diagnosing tubercle in any part of the body*.

In ophthalmology positive results have been obtained from the Calmette preparation by Painblan[20] in two patients affected with tuberculosis of the conjunctiva. Brunetière,[21] who described at some length the *technique* of the test, obtained negative results in three eye cases in which a tuberculous origin was suspected—namely, kerato-iritis, interstitial keratitis, and exudative choroiditis. The most important communication yet published is that by Aubaret and Lafon,[22] who employed the serum in seventeen eye cases. Their series included tubercle of the choroid (1), phlyctenular disease (4), episcleritis (2), interstitial keratitis (1), lacrymal affections (8), and, finally, optic papillitis in cerebral tumour (1). As a result of their experiences Aubaret and Lafon conclude that the ophthalmo-reaction (of which they describe four grades) is likely to render considerable service in ophthalmology. Brunetière, in a second communication,[23] reaffirms the diagnostic value of the plan, and regrets that it is not applicable to every doubtful case.

At a recent meeting of the Ophthalmological Society of Paris (October 8th, 1807), Kalt[27] related a case of long-standing sclero-iritis where a transitory aggravation of the symptoms followed at six days' interval the application of 1% tuberculin to the eye for purposes of diagnosis. Kalt mentioned, moreover, a case of tuberculous iritis where something of the same kind occurred. So far as I am aware, no other bad results have been reported.

It is scarcely worth while nowadays to argue, as C. Hilton Fagge[24] did, whether multiple tuberculous affections are not sometimes altogether independent of one another. It is, at all events, clear that intra-ocular tuberculosis, say, of the choroid, must be secondary to a focus of tuberculosis in some other part of the body. Its very existence, therefore, implies an infection of the blood-stream. At the same time the finding of a tuberculous focus—for example, in the glandular system—does not necessarily stamp an obscure eye disease as belonging to the same category. In much the same way a positive reaction after the injection of tuberculin can do no more than suggest that a given eye disease is probably of tuberculous origin, and only then

provided that other ætiological factors, especially syphilis, can be excluded. What is more conclusive is the production of a focal reaction as regards the ocular disease itself, such as would be shown by an exacerbation of inflammatory phenomena, but this happens comparatively seldom, whether tuberculin is injected beneath the skin or dropped into the eye. Thus, Stock[3] in 76 patients with chronic uveitis, obtained a positive result in 45 cases, but in 7 alone was there local reaction.

After all, the position with regard to tubercle is neither stronger nor weaker than it is with regard to syphilis and some other constitutional ailments. In clinical work we constantly assume that an irido-cyclitis which coincides in point of time with an ulcerated throat, symmetrical cutaneous eruptions, shedding of the hair, and general *malaise* is, like the symptoms mentioned, merely a secondary manifestation of constitutional syphilis. The diagnosis is probably correct, but on the evidence before us can be no more than that. It would be rendered stronger if the symptoms speedily yielded to mercury, and be assured if the spirochæta pallida was found in the tissues of the iris or in fluid from the anterior chamber.

A few details may be useful to those who are interested in the new method of diagnosis. According to Calmette, ordinary tuberculin or Koch's old preparation must never be employed, since their contained glycerine is apt to irritate the eye and thus to simulate a true ophthalmo-reaction.* One part of dry tuberculin, precipitated by alcohol, is dissolved in 100 parts of sterilised and distilled water, and of this liquid one or two drops are placed in the eye to be tested. The eye is not covered with any dressing. The dry tuberculin is put up by the Pasteur Institute at Lille in tiny glass phials, and the necessary solution is made extemporaneously by adding ten drops of sterilised water to the contents of the bottle. Each phial therefore contains enough for ten applications. A more convenient and economical form is now to be obtained in the shape of an hermetically sealed glass pipette, provided with a rubber cap, which contains enough of the solution for two or three applications. The price of neither preparation, (supplied by Martindale, 10, New Cavendish Street, London, England) is prohibitive.

Personal Experiences.

Speaking personally, I have employed the 1 per cent. watery solution of tuberculin, exactly as recommended by Calmette, in all my experiences, which now number between forty and fifty. The reaction, broadly speaking, followed the lines previously described. At the same time, I have seen a low grade of follicular

* According to recent experiments conducted by Citron, however, it appears that ordinary tuberculin, diluted with water to 1 or 2 per cent., may be used for the purpose.

inflammation persist in one instance for about twenty days; in another for about twenty-four days; and in a third for at least forty-two days. It caused, however, no distress to any of the patients, who, indeed, seemed to be unaware of its existence. In a fourth case a diffused dilatation of the lymph capillaries of the ocular conjunctiva outlasted the reaction by several weeks. In almost every instance it was noted that the reaction involved mainly the lower palpebral conjunctiva, together with the lower half of the ocular conjunctiva, the other parts of the mucous membrane of the eye being relatively much less affected. In several cases reaction was severe, and lasted for a week or longer.* Chemosis, however, was not observed. On several occasions reaction was delayed, *i.e.*, did not supervene for twelve or fifteen to twenty-four hours after the application.

Speaking generally, a positive reaction was obtained in every eye case where there existed clinical evidences of tubercle. Examination subsequent to the ophthalmo-reaction disclosed tuberculous foci in some instances where the latter had hitherto lain unsuspected. In another group of cases, careful examination failed to reveal any tuberculous lesion, although the Calmette reaction was obtained. Lastly, in many cases where there were no grounds for believing that tubercle existed, the Calmette reaction was negative. The general outcome of my experience has been to leave me under the impression that in the Calmette reaction we have been endowed with a most valuable means of recognising tubercle.

In this place I have no intention of detailing all my experiments, negative and positive, many of which will be found described in the *British Medical Journal* of October 19th last. I shall confine my remarks to three groups of cases, *viz.*:—(1) superficial scleritis ("episcleritis"); (2) irido-cyclitis; and (3) choroiditis.

(1) **Superficial Scleritis.**—The first patient, a female aged 19 years, manifested two large patches of episcleritis, one above, and the other below the cornea of the right eye. The fundi were normal. Clinical investigation revealed no definite signs of tuberculosis, although several groups of glands, including the axillary, the cervical, and the femoral, were readily palpable. The ophthalmo-reaction was of a pronounced character. In cases Nos. 2 and 3 the ophthalmo-reaction could not be elicited. In No. 2, which occurred in a woman of 50 years, the disease had persisted for 12 months, attacking first one eye and then the

* J. Comby met with an excessive reaction twice amongst 24 children. In order to avoid this undesirable result, he recommended the use of an 0·5 per cent. solution of tuberculin, which he employed in 108 patients, in whom the reaction was never more than moderate.—(*La Presse Médicale*, July 17th and 24th, and August 10th, 1907.)

other. The woman was poorly nourished, and presented evidences of incipient rheumatoid arthritis. No. 3 was a recent and much less severe case, the cause of which is still unknown. Case No. 4 was seen in a woman (Anna G.), of 40 years, who had a large tender scleritic hump, of several weeks' duration, above the left cornea. Old posterior synechiæ were present; a former attack in the same eye had lasted for nearly a year. Whilst under observation, the patch of scleritis increased in size, its surface became curiously mottled with what might well have been miliary tubercles, and the inflammation extended, as a finger-like process of deep opacity, into the neighbouring parts of the cornea. Ophthalmo-reaction positive and decided on the second trial.* Physical examination revealed slight changes, presumably tuberculous, at the apex of one lung, and one gland, the size of a hazel-nut, was found in the right posterior triangle of the neck.

(2) **Irido-cyclitis.**—The question here is not whether tubercle is capable of causing iritis. That much is admitted by everybody—at least in so far as regards an inflammation of the iris characterised by the local appearance of small, grey, non-vascular nodules—miliary tubercles.

It will also be conceded that a condition of chronic irido-cyclitis may be present for weeks or months before tubercles are visible on the iris, as in the following case:—Mrs. T——, aged 55 years, consulted me on 7th September, 1905, with the history that there had been two attacks of inflammation in her left eye, four years and six months respectively before I saw her. The left pupil was "excluded," and the sight of that eye was 4/60. Some scars on the right side of the neck showed where abscesses had been opened at 14 years of age. Some of the cervical glands were slightly enlarged at the time of my examination. On 27th September I performed a large iridectomy upwards on the affected eye. On 13th June, 1906—*i.e.*, upwards of nine months after I first saw the patient—the affected eye showed three tuberculous nodules on the iris, along with deposits on Descemet's membrane.

The point at issue, rather, is how far tuberculosis is responsible for a more or less chronic inflammation of the iris and ciliary body, unaccompanied clinically by any distinguishing signs. According to Stock's recent investigations, mentioned earlier,[3] of 59 patients suffering from chronic irido-cyclitis no fewer than 61 per cent. showed a general reaction after the injection of Koch's older tuberculin, T.V. Again, Brückner[26], in 35 cases of iritis, obtained in 13, or 37 per cent., a general or local reaction after the

* Morax (*Recueil d'ophtalmologie*, October, 1907, p. 597) in a case of primary tuberculosis of the conjunctiva had a negative result from tuberculin a fortnight after the beginning of the disease, yet a decided ophthalmo-reaction followed a second application made a month later.

subcutaneous injection of Koch's original tuberculin. Most of my own cases, which have not numbered more than a round dozen all told, have been marked by slight or absent vascularity, and such an extremely insidious course that serious complications, as "exclusion" or "occlusion" of the pupil or *iris bombé*, came on without the eye ever having been acutely inflamed. They were essentially instances of what has been called "quiet" or "insidious" iritis by Jonathan Hutchinson, junior.[25] Their nature was diagnosed from the absence of the common causes, as syphilis or gonorrhœa, the co-existence of tuberculous lesions in some other part of the body, or, less commonly, by the late appearance of tubercles on the iris, as in the case outlined above.

The three following cases are instructive:—

CASE No. 1.—A girl, aged 9 years, came under notice on January 14th, 1903, with the history that she had been treated for four years at the North-Eastern Hospital for Children, London, on account of "tuberculous disease of the left knee." On examining her eyes, which were free from obvious signs of inflammation, it was found that the right pupil was "excluded" and "occluded" and that many posterior synechiæ were present in the left eye, as the result of an irido-cyclitis which had escaped the attention of the child's mother, who declared that the eyes had never been inflamed. The patient, the eldest of three children, was well-nourished, and manifested no stigmata of hereditary syphilis. Arthritis of the left knee and dactylitis of the left little finger were present. On February 23rd, 1903, iridectomy was performed on the right eye, and nine days later, on the left eye. On June 18th, 1904, there was much pigmented punctate keratitis: right vision equalled perception of light, and left, fingers at 0.5 metre. From that time to the present the child has been subject to trivial attacks of redness of the eyes, sometimes associated with or followed by temporary hypopyon. The injection of 0.005mg. of tuberculin T.R. on March 28th, 1907, was followed by no reaction, local or general. On May 2nd, 1907, as some doubt was felt as to the exact cause of the irido-cyclitis, the aqueous humour was withdrawn from the left anterior chamber, but examination of the fluid was negative as regards either the treponema pallidum or the tubercle bacillus. On June 25th, 1907, the injection of 1/750 mg. of tuberculin T.R. was followed by a slight rise in temperature, along with pain at the site of the needle-puncture. On September 23rd, a slight reaction was obtained nine hours after the Calmette serum had been applied to one eye. It had disappeared seventeen hours after the application. The conclusion of the whole matter is that the irido-cyclitis is of tuberculous origin.

CASE No. 2.—Miss Annie J. Y———, 32 years, consulted me on 23rd July, 1903, for failure of sight in her left eye, first noticed

a month previously. There had been neither pain nor inflammation. The patient was the eldest but one of a family of nine, of whom three died in infancy. There had been one miscarriage; no still-births. A sister, now aged 34 years, suffers from diabetes. The patient herself, although always rather delicate, has suffered from no definite illness. She is of a strikingly pallid appearance. All her teeth have been lost. The left pupil was irregular, owing to the presence of numerous posterior synechiæ. No tubercles on anterior surface of iris. T.n. V. 6/18. Under treatment she regained almost normal sight by November 5th, 1903. Twenty months later (June 5th, 1905) there was a recurrence, again without definite inflammation, and sight on this occasion was reduced to 6/18. After 6½ month's treatment (January 18th, 1906) the sight of the affected eye had risen almost to normal. Some six months later, however, it had fallen to 6/12. On this date, some suspicious signs were for the first time discovered at the apex of each lung. I did not see Miss Y. again for 8½ months (April 3rd, 1907), when she came with the sight of left eye reduced to hand-reflex, cornea cloudy, keratitis punctata, *iris bombé*, and tension *plus* 2. The only complaint, besides that of bad sight, was of the eye aching at night. The removal of a piece of iris three days later was followed by reduction in tension and the regaining of sight equal to 3/60. The patient was then sent to the country, where she remained with great benefit to her health until October 22nd, 1907. At 12.45 p.m. on that day a drop of Calmette serum was placed in the right (unaffected) eye. 13¼ hours afterwards the eye began to water and discharge, and a few hours later, there was definite redness of the eyeball. Three days after the application there was still slight redness of the caruncle and of the lower palpebral conjunctiva. The physical signs noted at the apex of each lung on July 26th, 1906, had by this time disappeared.

CASE NO. 3.—This case is in certain respects one of the most conclusive of the series. Mrs. P——, aged 35 years, seen on September 23rd, 1907, complaining of "mistiness" and "smuts" before her right eye, of two weeks' duration. No pain, although the eye had tended to be a little bloodshot. No recent illness. General health stated to be good. Married nine years. One child, a girl, aged six years, now in good health, but as a baby she suffered from bronchitis for several weeks. The patient was affected with phlegmasia dolens after the birth of this child. One miscarriage at about the second month. *Family history.*—Father died of phthisis pulmonalis when aged 49 years. Paternal grandfather succumbed at an advanced age to asthma. One of the patient's sisters, then aged 28 years, was under my care in 1898, suffering from irido-

cyclitis of her left eye. What was believed to be a tubercle of the choroid was found in the fundus of the affected eye, close to the inner side of the optic disc. *On examination.*—R. E. a trace of ciliary redness, increased on exposure of the eye. V. c. + 4 D. sph. 6/36. T. + 1·5. Surface of cornea slightly irregular. Pupil sluggish to light, although responding well and regularly to atropine. No posterior synechiæ. Much punctate keratitis. No details of fundus could be made out. L. E. V. c. + 4·5 D. sph. 6/18. T. normal. A small area of choroidal disturbance, seemingly old, lies just to the inner and upper side of the fovea centralis. With a view to the discovery of some constitutional cause for the eye mischief, the patient was examined by Dr. George Carpenter, who reported that she appeared to be in good health, and from the muscular point of view, well-developed. There was slight enlargement of the concatenate glands, especially on the left side of the neck. The inguinal glands were also palpable. Spleen not enlarged. Although the patient's chest was narrow, yet expansion was fair, and morbid signs could not be detected. Rheumatism denied. No stigmata of syphilis, acquired or inherited. *Course.*—On September 24th, at 12.15 p.m., one drop of Calmette's serum was placed in the patient's left eye. Nothing was noticed until 5 a.m. on the following day, when the lids of the left eye felt stiff and tender. When Mrs. P—— was seen 23¼ hours after the application, there was redness and slight œdema of the left upper lid, together with rather marked conjunctivitis of that eye. The ophthalmo-reaction had not wholly subsided in four days. On September 28th the cornea had cleared sufficiently to allow of the fundus being examined ophthalmoscopically. Two-thirds of a P.D. above and somewhat to the outer side of the optic disc was a soft-edged, ill-defined, greyish-white area, the diameter of which was about equal to that of the optic disc. It lay beneath the superior temporal vein, and slightly obscured the latter. It was made up of two semi-confluent masses of tubercle, the pressure of which appeared to have obstructed two branches of the superior temporal artery, to judge from the facts that (*a*) the terminals of the vessels could not be identified with the ophthalmoscope, and (*b*) the lower nasal quadrant of the visual field, as tested with a 10 mm. white square, was lost. The choroidal changes looked recent, and were doubtless so, since the patient had noticed no sector-like defect in her field before the eye became affected, but was now extremely conscious of its existence. On this day the anterior chamber was tapped, and the aqueous humour thereby obtained was smeared on cover-slips and inoculated upon tubes of blood-serum and of glycerine-agar. Careful search of the smears when treated by the Ziehl-Neelsen method, resulted in the finding of a few—very few—rod-shaped organisms, stained

red by the fuchsin. These acid-fast bacilli could only be those of tuberculosis.

(3) **Choroiditis.**—Case No. 1 was in an intelligent male patient, Albert B——, aged 47 years, who suffered from widespread bilateral choroido-retinitis, which he was inclined to attribute to glare. No history or personal evidence of syphilis was forthcoming. Gonorrhœa admitted. Some signs of auto-intoxication. Calmette's ophthalmo-reaction could not be obtained, so that the cause of the ocular disease still remains obscure. Case No. 2 was observed in a well-grown girl of 15 years, who presented nystagmus, convergent squint of the left eye, and defective sight (R.E. 6/36: L.E. 1/60), due to optic atrophy, associated with central choroiditis and beautiful perivasculitis. The family history was suggestive of syphilis. Of 7 children born alive, 5 were living, 2 having died as babies from "convulsions." There had been one still-birth and one miscarriage. The patient's teeth were dwarfed, and the first permanent molar of the right upper and lower jaw was of suspicious appearance. The forehead presented well-marked "bosses." The Calmette reaction could not be elicited. The conclusion was, that the eye changes were dependent upon hereditary syphilis.

Case No. 3.—Beatrice C——, 22 years, a well-grown and good-looking girl, with excellent teeth, presented no evidences of hereditary syphilis, neither was there any reason for suspecting the acquired disorder. *Family history.*—The patient was the fourth in a family of six. One sister, aged 30 years, suffered from phthisis pulmonalis. A paternal aunt died at about 30 years of age from phthisis. A maternal uncle is still alive between 60 and 70 years, although he has a "fibrous lung." *Personal history.*—No illness since childhood. *On admission*—R.V. (corrected), 5/9 ptly. L.V. (corrected) 5/24. The underlying condition was one of disseminated choroido-retinitis, the changes in the yellow spot region of the left eye being best described as map-like. Ophthalmo-reaction negative.

The four cases to be next described were not examples of solitary, atrophic, more or less pigmented patches in the choroid, such as Dr. George Carpenter and I have elsewhere[2] described as examples of "obsolescent tubercle." On the contrary, the changes were more or less diffused, or eventually became so, and could not be distinguished with the ophthalmoscope from those due to syphilis, hereditary or acquired. Indeed, had evidence of syphilis been forthcoming, they would have been accounted specific by any surgeon.

The facts are briefly as under:—

Case No. 4.—A lady, aged 20 years, whose family history was unimportant, showed in the central region of each fundus oculi a map-like area of choroido-retinitis, associated with a central

scotoma for colours, and reduction of sight (corrected) to 6/12. Whilst under observation, additional areas of disease made their appearance, chiefly in the periphery of each fundus. During the progress of the case, the knees and ankles became swollen in quick succession, but considerable doubt was felt by the medical attendant and myself as to the exact nature of the condition, whether rheumatic, syphilitic, or tuberculous. The ophthalmo-reaction, however, was positive and decided. The patient was then examined by my friend, Dr. J. Porter Parkinson, who failed to find any evidence of tubercle.

CASE No. 5.—A healthy-looking young lady, 19 years of age, fell under my notice on June 29th, 1903, on account of a failure of vision in her left eye. *On examination.*—R.V.$<\frac{6}{6}$—3.5 D. $=\frac{6}{5}$ptly. L.V.$<\frac{6}{60}$—3.5 D.$=\frac{6}{18}$ptly. The defective sight in the left eye was found to be due to an area of superficial choroido-retinitis, with relatively little pigment, in the central region of the fundus. No keratitis punctata or vitreous opacities were present. A scotoma corresponded to the area of diseased fundus. After getting worse, the condition eventually became quiescent, with vision (corrected) of about 6/9, but the scotoma did not disappear. The ophthalmo-reaction was elicited in this patient.

CASE No. 6.—A healthy-looking and well-nourished married woman, aged 29 years, apparently free from any traces of syphilis, was affected with gross disseminated choroiditis, having no ophthalmoscopic features whereby it could be differentiated from a specific affection. Although the Calmette reaction was positive, yet no tuberculous focus could be found on clinical examination.

CASE No. 7.—Emma D———, 31 years, a thin, pallid, rather miserable-looking woman, belonged to a family of eight members, one of whom had died at six months from "bronchitis." *Personal history.*—Four years ago the glands in the neck became enlarged, but yielded to several months' treatment. The patient had been losing flesh for the last eight years. She had a slight cough, sweated at night, and was very subject to "colds," during which her voice usually became hoarse. She has been anæmic for three or four years, and has also suffered from dyspepsia and "nervousness." *On admission.*—Gross disseminated choroiditis of both eyes. The sight of the right eye (corrected), was 5/60, and that of the left eye (also corrected). 5/5 ptly. The chest was flat, and its expansion deficient. Moist sounds at the apex of each lung. Glands not now enlarged. The Calmette reaction was positive.

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ON TWO CASES OF FAMILY DEGENERATION OF THE CORNEA.

BY

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If any apology be required for the publication of brief notes of such a limited series of cases of corneal abiotrophy, as is here described, it is to be found in the fact that although a considerable number of such cases has now been recorded, the primary cause of the condition is not, apparently, much more clear than it was.

It follows, therefore, that all notes and contributions to the literature of this peculiar and interesting condition may be useful to the future investigator.

It is manifest from the history of the following cases that they belong to the class of "family degeneration of the cornea," although it seems that the form of the change is slightly different from that of any previous case. They are, however, closely allied to the "nodular" form of the condition.

Cases.

1. A. M., *æt.* 34 years, first came to the Eye Infirmary, Charlotte Street, Glasgow, on the 6th of January, 1903, complaining of dimness of vision.

He was a man of medium height, and was so slenderly built as to look almost emaciated. His colour was very pale, and he had a peculiar, anxious expression, which was probably due to habitual protection of the eyes against strong light. Although he had been a spirit salesman for many years, he was almost a total abstainer, and smoked very little. His general health had always been excellent. His sight, he stated, had been quite good until about his nineteenth year, when failure began without the least sign of inflammatory disturbance, and slowly progressed until he had, in September, 1902, to leave his situation, as he could no longer see to do his work. For the last two years, indeed, his work had only been done under great difficulties. There had been no period of rapid increase of the affection and never any pain or outward evidence of congestion of the eyes. The two eyes progressed simultaneously, no difference being noticeable at any time.

There was no history of syphilis, tuberculosis, or other disease in the family, and his parents, who were still alive, were not related, but came one from the west and the other from the east of Scotland. The man knew that both parents had excellent sight and could not remember hearing of any relation—uncle, aunt, cousin, or other—who had defective sight.*

His early years were spent in the east country, but he had been in Glasgow for fully twenty years, and had enjoyed, apart from his eyes, excellent health. He had been at the Eye Infirmary in 1890 and had local treatment, which gave no benefit. Unfortunately, no note of the former condition can be found.

Condition in 1903.—The eyelids were normal, showing no trace of past inflammation. They were kept habitually in a half-closed position, as is seen in cases of myopia. The conjunctiva, both ocular and palpebral, showed no congestion. There was slight photophobia.

The corneæ were almost exactly alike. Each was clear for about 1·5 mm. from its margin so that the iris could be seen fairly well, but the central part was almost completely occupied by little grey spots of opacity, which varied in size from ·5 to 1 mm. in diameter, were almost circular, and remained discrete. The entire central area was equally affected, and the spots were so close together that practically no transparent tissue remained. The opacities in the central area seemed to be larger than those in the more peripheral part. There was considerable disturbance of the surface of the cornea, as the reflexes were much broken; the irregularity was fairly coarse and could easily be made out with the unaided eye. The iris, so far as it could be seen in each eye, was somewhat dull looking, but reacted to light rather slowly and to homatropin freely. Dilatation of the pupil improved the vision to some extent, but the fundus could not be clearly seen. No lens improved the vision, either with or without dilatation of the pupil. The tension was slightly low. The vision was only hand-movements until the pupils were dilated, and then was only fingers at one foot or so.

As dilatation of the pupils resulted in a certain amount of improvement of vision, an iridectomy was done downwards and inwards in each eye. The cornea healed well with a trifling amount of reactionary opacity, and when the vision was tested some weeks later it was found to have improved to fingers at ten feet for the right, and at six feet for the left eye. Three months later the vision had still further improved to right $\frac{15}{200}$, left $\frac{10}{200}$, and when last seen, on the 28th May, 1907, it was $\frac{20}{200}$ both eyes, and letters of Jaeger No. 16.

A. M. has thus been for four years since the operation in a fairly satisfactory position, manifestly not getting any worse and able to pursue his former avocation. His appearance has not changed in the four years, nor have the eyes altered, so far as can be detected. So far as he has noticed, no weather conditions have had any influence upon the eyes. The man is still unmarried.

2. The second case is that of W. M., a brother of the former, aged 36 years, who came to the Eye Infirmary on the 22nd of May, 1903. He had formerly been employed as a boiler fireman at a colliery, and lately had been unable to work on

*See under Case 2.

account of defective eyesight. The defect first became noticeable thirteen years ago, at the age of 23 or so, and therefore about two years after his brother became affected.

The man's general appearance was very similar to that of his brother, whom he greatly resembled. He was slightly above the medium height, of very slender build and somewhat emaciated appearance, and had the same anxious expression as his brother. His colour was very pale. He gave no history of illness of any kind, being quite a healthy and a hard-working man.

Condition in 1903.—The eyelids showed slight indication of irritation, and the conjunctiva was to a slight extent congested. There was some degree of photophobia, and he stated that the heat of the furnace always caused considerable irritation.

The corneæ were almost exactly like those of his brother, there being the same clear peripheral ring and the same central area of dotted opacity with roughened epithelium, sufficient to give rise to distortion of a reflected image. The iris of each eye reacted fairly well both to light and to homatropin. The fundus could not be seen in either eye. The tension was rather under the normal. The vision amounted only to hand-movements with either eye, and was to a slight extent improved by dilatation of the pupil.

As the operation in the brother's case had been of considerable service in improving the vision, it was decided to try it in this case also, and the result was so far satisfactory that a month later the man was able to return to work with vision equal to $\frac{15}{200}$ in either eye.

The next time this man was seen at the Infirmary after August, 1903, was May, 1907, when he returned on account of continuing irritation of the eyes, he having been exposed to very trying heats in the furnace-room of a steamer. The use of alypin at once made the eyes more comfortable. It was found that the vision was reduced to $\frac{9}{200}$ in each eye.

There was a slight amount of haze in the formerly clear peripheral zone of the cornea, but no apparent alteration in the central area. The tension was now decidedly lower than normal. The patient's general condition was very poor and the anxious expression, before noted, was now somewhat accentuated.

The use of eserin and dionin was followed by rapid improvement : the periphery of the cornea cleared up well and the vision was improved to $\frac{20}{200}$ in the course of a month. So far as could be observed, no change had taken place in the central area of the cornea in the four years which had elapsed since the operation.

On being closely questioned, this man stated that he had recently heard that a married sister who resides in England has had defective vision for several years ; the history of the affection being quite comparable with that of his own and his brother's condition. It was also found that a sister who had died several years ago had defective sight of a slowly progressive type. Two younger brothers, who complete the family, and who are still alive, have no defect of vision.

Remarks.—Here, then, we have certainly two, and possibly four, members of a family of six otherwise healthy people suffering from an affection of the eyes, which is evidently a form of the "nodular" type of "family degeneration of the cornea."

Neither brother suffers from acne or from enlargement of the thyroid gland. Both are thin, wiry men, with pale colour, and general appearances of emaciation. Both are bright, intelligent men of cheerful temperament, quick in movement and speech, and, considering their weight, physically strong.

In each case the first evidences of the condition became manifest after puberty was reached—in the elder man at 23 and in the younger at 19 years.

The apparent cessation of the advance of the condition after iridectomy may be only a coincidence, but is interesting

The difference between these cases and other similar ones is in

regard to the size of the spots and their remaining circular and discrete. In some cases, where the spots were large, they were confluent and no longer circular, whilst in others, where they were circular throughout, they were of small size. The roughening of the surface epithelium seems to occur in some but not in other cases, and probably depends on the depth at which the spots are situated.

In only one other observation, so far as is known, was there any note of the leanness which was so marked a feature in these two men, namely, in that of Fleischer, *Die Ophthalmologische Klinik*, Juli, 1905.

ON SO-CALLED FILTERING CICATRICES IN THE TREATMENT OF GLAUCOMA.

BY

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In consequence of the fact that the treatment of glaucoma has been purely empirical, there have from time to time been put forward a number of *post hoc* arguments in favour of particular methods of making the operative incision. The theory of filtering cicatrices is founded on such arguments, and is built on the belief of the possibility of establishing permanent leaking wounds; in performing which the accompanying iridectomy is only done with the idea of preventing prolapse. The whole theory of such incisions rests on a lack of appreciation of the process of repair that follows corneal and scleral wounds, and on a complete misapprehension of the way that the beneficial results of operation are obtained. The success of operative procedure in glaucoma does not result from the particular method of incision adopted, but depends, as has been well known clinically since Graefe's time, on the iridectomy and on the state of the iris. That such are the facts of the case anatomical investigations bear out, and show that, while corneal incisions heal and cicatrize, the cut iris surface never does, but always remains as when first severed, thus acting as a drainage area, the efficacy of which depends on the condition of the iris at the time of operation.

There have lately been described two new operations for the relief of chronic glaucoma, in which the main object of the operation is the production of a permeable wound. For their respective methods of operative procedure, Prof. Lagrange[1] and Col. Herbert[2] have claimed such an alteration in the process of

healing as to result in a direct and permanent communication between the anterior chamber, on the one hand, and the sub-conjunctival tissue, on the other. Putting aside modifications in *technique*, the essential difference between these two methods of

Fig. 1. *Limbal incision.*—From a specimen kindly given me by Prof. Fuchs, from a case of sudden death eight days after Graefe's extraction.

There is gaping of the wound with over riding of the corneal flap (C). The area (A) between the vertical line and the margin of the incision represents the part removed by Prof. Lagrange, and that which Herbert after cutting leaves *in situ*. The sub-conjunctival tissue (L) is sending a vascular connective tissue downgrowth (C T) into the wound. The cells of this connective tissue plug lie vertical to the corneal surface. At the inner margin the endothelium (E) is growing into the wound track.

The surface epithelium at (P) is prevented from descending further into the incision by the mediate union of the conjunctival flap, the line of which runs between (P) and (K). The empty space at (K) is caused by skrinking in the process of preparing the specimen.

The width of the gap filled by the intercalary ingrowth is ·3 mm.

The iridectomy stump (I.S.) shows signs of considerable trauma, but no manifestations of reaction of healing.

There is blood extravasated in both the anterior and posterior chambers.

forming the incision is that while Prof. Lagrange snips off with a pair of scissors a piece of the margin of the lip-wound, and so makes a more or less wide gap at the centre of the incision, Col. Herbert only cuts off a similar piece subconjunctivally and leaves it *in situ*, as if it were a corneal graft. Iridectomy is performed by both operators with the object of preventing prolapse (Fig. 1.)

A consideration of the physiological conditions that govern the reparative processes of corneal wounds is of such paramount importance in the discussion of claims such as made by the above-mentioned authors, that it will be necessary to briefly review the changes that follow upon incisions of the cornea. Before doing so, however, one must note that in corneal and corneo-scleral wounds there is always a tendency for the corneal flap to slide over and override the outer or scleral margin of the incision, so producing a certain amount of gaping. This overlapping follows in consequence of the incision releasing the corneal fibres from the state of tension in which they normally lie, thus allowing them to spring forward, and so giving rise to the post-operative astigmatism which is so marked immediately after an incision. It was this gaping which caused von Graefe to devise his peripheral incision.

The manner in which corneal wounds are healed depends on the position of the incision, whether (I) in the clear cornea or (II) in the limbus or corneo-scleral margin; in either case the process may be divided into three stages of (a) mediate union, (b) primary union, (c) permanent union and cicatrization.

I.—Incisions in the Clear Cornea.

(a) *Mediate Union* is brought about by a fibrinous plug, and is complete in 12-24 hours.

(b) *Primary Union* follows in consequence of the surface epithelium growing inwards down the outer margin of the wound, while at the same time the endothelium at the posterior surface of the cornea covers the inner aspect of the incision, and so between them enclose the fibrinous plug. This is complete in 7-14 days.

(c) *Permanent Union and Cicatrization* is the product of the corneal parenchyma, and results in a linear and inconspicuous cicatrix.

II.—Incisions in the Limbus.

This is the type of healing which is specially under discussion, as most operative incisions as well as "filtering cicatrices" are made in this region (Fig. 1).

(a) *Mediate Union* of the conjunctival flap prevents the downgrowth of the surface epithelium.

(b) *Primary Union* is brought about by a downgrowth of vascular subconjunctival tissue into the wound. The greater the gaping, the greater will the work of subconjunctival tissue be to fill up the space. At this stage the wound will certainly be a filtering area, the lip margins being swollen, and appear clinically opaque, owing to the imbibition of aqueous, but this is only a temporary condition, for, as in purely corneal incisions, the posterior endothelium grows in and eventually seals the inner margin of the incision to the completion of primary union.

(c) *Permanent Union and Cicatrization* is a slow process and is not complete for six or nine months, during which time the severed magins are brought closer together and thus the post-operative astigmatism is diminished. The cells of the intercalary mass during primary union lie vertically to the corneal surface and therefore at right angles to the normal course of the corneal parenchyma (Fig. 1). As cicatrization proceeds, the young connective tissue cells are replaced by fibrous tissue whose direction is now parallel with the corneal and scleral fibres, and so bring about a closer knitting of the wound. The capillaries which enter into the connective tissue downgrowth become pressed upon as cicatrization proceeds, and are either obliterated or remain as empty tubes in the wound-track. It is these empty vessels which on tangential sections have been described as channels leading from the anterior chamber to the sub-conjunctival tissue.

In the course of time the endothelium on the inner margin of the wound lays down a homogeneous membrane which unites the severed ends of Descemet's membrane.

Clinically, the obvious imbibition of aqueous by the severed margins disappears within a few days. The clearing up of this diffuse haziness around the corneal wound is, I think, strong *clinical* evidence against the permeability of corneal wounds. The thickening of the episcleral tissue over the wound, always most marked at that point where the gap to be filled up is largest, remains as "œdema," and as the sign of so-called "filtration" of the cicatrix, when, as a matter of anatomical fact, it is nothing more than the surface hyperplasia of the episcleral tissue which has supplied the wound with cicatrical material. Colonel Herbert[2] states that he was led to his method of operating as a result of observing this "œdema" after cataract extraction. I have examined microscopically both aphakic and glaucomatous eyes in which the limbus over the cicatrix was thickened, but the underlying wound was cicatrized and firm, precluding all idea of

filtration, the inner margin being at the same time lined by endothelium which was proceeding to lay down a new homogeneous membrane.

The sequence of events in the process of healing which has just been briefly described applies to all manner of wounds of the cornea, whether traumatic, or operative, in cataract cases, as well as in glaucomatous eyes. The healing follows one type and is the same in all cases, for when the incision lies in the limbus, the wound becomes filled with a vascular subconjunctival plug, which in the course of time becomes fibrosed and its inner margin re-lined by endothelium

Leber long ago pointed out that it was due to its endothelial lining that the corneal parenchyma was protected from the action of the aqueous, while Descemet's membrane, which is a derivative of the endothelial cells, has not this action. After an incision into the anterior chamber, wherever its position or method of formation, the endothelial cells grow along the internal margin of the wound and so come to seal it off. Once the growth of endothelium is complete the wound is no more a filtering cicatrix, but is shut off from the anterior chamber by a layer of new-formed endothelial cells which proceed to lay down a new homogeneous membrane between the cut surfaces of Descemet's membrane. It is this endothelium that precludes all possibility of a permanent filtering cicatrix following any operative incision, however devised.

In concluding, I would emphasize the fact that the success of operation in glaucoma does not lie in a "filtering" wound, but in the accompanying iridectomy[4]. The reason of the beneficial and curative action of iridectomy in glaucoma is accounted for by the fact that the cut iris surface forming the base and pillars of the coloboma never undergoes any reparative process[5], but always remains a raw, open wound, as when first severed, so acting as a permanently open filtering area through which the aqueous fluid can drain away. The efficacy of this drainage area depends on the operation being done before atrophy of the iris stroma has progressed too far.

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[3]Henderson, Thomson.—*Oph. Review*, May, 1907.
[4]Henderson, Thomson.—B.M.A., Exeter, 1907.
[5]Henderson, Thomson.—*Oph. Review*, July, 1907.

CLINICAL MEMORANDA.

A CONJUNCTIVAL CYST OF UNUSUAL SIZE.

BY

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Last year, in Jerusalem, I was consulted by Abdullah, an Arab, aged 26 years, who complained of a swelling in his left eyelid.

History.—The tumour had grown gradually; it was first noticed four years ago. There had been no pain.

Fig. 1.

Fig. 2.

Present condition.—The left eye is pushed downwards and outwards by a large tumour, which occupies the upper *cul-de-sac*, and extends from the inner canthus to within half a centimetre of the outer canthus. There is fluctuation over the whole of the extent of the eyelid.

On everting the lid, it is seen that the tumour is a translucent, blue-looking cyst, apparently lying just under the conjunctiva. Its appearance can be well seen in Figs. 1 and 2.

The patient was admitted to the British Ophthalmic Hospital.

Operation.—Under cocaine, an incision about two centimetres long was made through the conjunctiva over the tumour, and the conjunctiva was carefully reflected from the cyst wall. The cyst was now seized and dissected out whole. It lay between the conjunctiva and the tarsus. The wound was united by silk sutures.

The case did well, and in a few days the sutures were removed. The eye at once returned to its normal position.

Fig. 3.

Pathology.—The tumour was a thin-walled, translucent cyst, about 2·5 centimetres long and 1·75 centimetres in diameter. In Fig. 3 it is shown in proximity to a hen's egg, so that its great size may be the more readily appreciated.

It contained a straw-coloured fluid, and some *detritus*, which under the microscope was found to be composed of cells—some cubical and others flattened.

NOTE ON A CASE OF FATAL SUBCUTANEOUS HÆMORRHAGE IN A NEW-BORN CHILD.

BY

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Rose G., aged seven days, was admitted into the North-Eastern Hospital for Children, under Mr. Sydney Stephenson, on 8th August, 1907, for hæmorrhage under the substance of the eyelid.

The patient was the third child of a healthy family, in which there was no history of hæmophilia. The labour had not been instrumental, and had lasted only two hours, without any difficulty at all. No history of injury could be obtained, and there had been no discharge of blood from any mucous membrane. The child had been breast-fed.

On admission, the child appeared well-nourished, and weighed $6\frac{3}{4}$ lbs. The umbilicus was healed, and looked clean and healthy. Both the upper and lower lids of the right eye were swollen and infiltrated with blood. The eyes could be opened, and the corneæ were clear. There was no proptosis of either eye. In the substance of the right cheek, midway between the eye and the angle of the mouth, was a similar subcutaneous hæmorrhagic infiltration of the size of a sixpence, and another was found just below the insertion of the deltoid on the outer side of the left arm. This was about the size of a shilling. No other abnormalities could be detected.

On 9th August, the temperature rose to 103° F., but fell on the following day, and did not again rise higher than 99° F. The child wasted rapidly, but no fresh hæmorrhages appeared, and at no time was there any discharge of blood from the conjunctiva, rectum, mouth, or urethra. Death occurred at noon on 12th August. Permission for a *post-mortem* examination was refused.

Apparently this case (for permission to publish which I am indebted to Mr. Stephenson) is an example of fatal subcutaneous hæmorrhage of the newly-born, several of which have been recorded, and which are apparently allied to cases of melæna neonatorum.

A CASE OF CONGENITAL COLOBOMA OF THE EYELID.

By

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I am indebted to Mr. L. Vernon Cargill for permission to record the following case.

Amy R., aged 17 years, attended the Royal Eye Hospital on February 1st, 1907, for a slight conjunctivitis. Deformity of both lower lids was then noticed. The mother states that patient was "born with the eyes that shape," and that during the first two

or three months of this pregnancy, she herself was subject to ill-treatment from her husband, often being kicked in the abdomen. She was also during this time much frightened by a severe thunderstorm, and, again, by sitting on a mouse. There was

however, at no time any sign of miscarriage or of uterine inflammation.

Patient was a full-term child, and labour was natural. She has had no injury to, or operation on, the eyes, and these have only been inflamed twice, both times during the last six years. The left cornea was attacked seven months ago. There is no definite history of any congenital anomaly in the family, although of one sister, who died at six years, it is stated that the eyes were always watering.

Present Condition.—On examination, the lids do not meet on gentle closure by about 2 mm., the aperture on both sides being wider in the middle and internal parts; with a slight effort, the lids can be completely closed.

Right Eye.—The palpebral border of the lower lid is curved, as though a piece had been punched out from the external and middle parts. Normally pigmented eyelashes are present only on the external third of the lid; on the other two-thirds these are replaced by a row of tiny, unpigmented hairs, arranged, however, as cilia. The tarsus cannot be felt. There is no appearance of scar-tissue. The punctum lacrymale is absent. About 4 mm. internal to the internal canthus is a small blind pit, into which a probe can be passed for 1 to 2 mm. No epiphora has been ever complained of.

Left Eye.—The upper lid droops slightly at the external part, as though it were pulled downwards by the lower lid. The lower lid also appears as though it had had a piece punched out of its external two-thirds. At the junction of external and middle thirds is a notch, about 1 mm. deep, at the apex of which the tissue resembles scar-tissue, and from this a line of similar tissue, about 6 mm. long, extends downwards and outwards. On this line, just below the notch, is a tiny nævus. There is no scar-tissue on the palpebral surface of the lid. External to the notch and for about 3 mm. internal to it, the eyelashes are normally pigmented. They are also present on the borders of the coloboma here, being altered in direction by the curving in of the palpebral border. They are absent from the rest of the lid, except for a tuft of 5 or 6 on the internal third. No tarsus can be felt. The punctum lacrymale is present and normally situated.

Both upper lids are normal, all cilia, and both tarsi and puncta lacrymalia being present.

Beyond a small nebula on the left cornea, just below the centre, the eyeballs are normal. The fundi are also healthy.

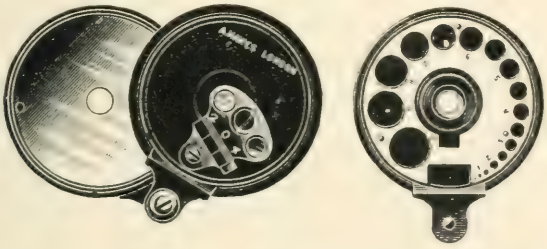
Both lower orbital margins and the prominences of the cheek-bones are poorly developed. The upper part of the right pinna is folded on itself downwards and forward. No other congenital deformities are present.

Remarks.—The explanation put forward by many authors to account for congenital coloboma of the eyelids, namely, by amniotic adhesions, would appear to suit this case. There is evidence of some possible disturbance of the contents of the uterus during the earliest fœtal months, when the eyelids are forming. If a fold of amnion became adherent to fœtal parts, just above the ear and below the eyes, these points lying in a straight line, it may be supposed that the ear was prevented from developing upwards, and forced downwards and forwards, while the folds commencing to form the lower eyelids were prevented from passing upwards over the eyes. Such interference would also account for the alterations in the eyelashes, for the absence of the right punctum, and for the poor formation of the facial portions of the superior maxillary bones. The appearance of scar-tissue at and below the coloboma suggests that when, later on, the amniotic adhesion gave way, the external third, which had developed normally, joined the other two-thirds, which had been kept back, and therefore separated, and this union is shown by the line of scar-like tissue. Intrauterine healing is suggested by the fact that the tissue, although like scar-tissue, cannot be called an actual scar.

NOVELTIES.

AN IMPROVED RETINOSCOPICAL MIRROR.

From the illustration it will be seen that two mirrors (one concave and one flat), $1\frac{3}{4}$ inches in diameter, are hinged together, so as mutually to protect one another. This is a well-known



device, but the improvement consists in having on the back of the concave mirror a small triangular carrier. This has three perforations carrying a + 2 D. and a + 4 D. lens, the centre one being unglazed. When examining by the indirect method either at will can be brought over the sight-hole of the mirror.

The advantage of examining with + lenses gives not only increased magnification, but lessens the distance at which the observer has to stand from the eye of the patient. To enable one to clean the lenses, the carrier is hinged on itself. The sight-holes in both mirrors are six millimetres in diameter, which is larger than commonly made. Messrs. Hawes, of Leadenhall-street London, E.C., made the instrument at my suggestion some years ago, and as it has proved of value to myself and has recommended itself to other ophthalmic surgeons, it may be worth the attention of others. Its price is 30s. A pupilometer is fitted to the back of the flat mirror.

A. ALISON BRADBURNE, F.R.C.S.Edin.

Southport, England.

TRANSLATION.

INJURIES TO THE EYES OF THE CHILD DURING LABOUR.*

(*Continued.*)

BY

DR. BRUNO WOLFF, of Berlin, Germany.

(*Translated by* ROSA FORD, M.B.Lond.)

AUTHOR.	REFERENCE.	CONDITION OF CHILD.	DETAILS OF LABOUR.
Sidler-Huguenin	*Loc. cit.*	3½ years old girl. After birth, the lids and surroundings of the R. eye were markedly swollen. After the swelling had gone down the mother thought that the R. eye was much larger than the left. At the present time there is distinct infantile glaucoma.	Forceps delivery.
Zweifel	*Lehrb. d Geburtshilfe*, 1895. S.576.	Traumatic exophthalmos.	Occurred through the squeezing together of the skull bones by the forceps.

**Beiträge zur Augenheilkunde :* Festchrift Julius Hirschberg, Leipzig, 1905.

Author.	Reference.	Condition of Child.	Details of Labour.
Tarpet	"Schädelfraktur durch die Zange, etc." *Monv. med.* Nr. 15, S. 227. Quoted, according to the reference, in the *Centralbl. f. Gyn.*, 1877.	L. eyeball projects forward. Conjunctiva infiltrated. R. side of face paralytic.	Rickets. Conjugate 8 cm. Forceps.
Thomson and Buchanan	*Loc. cit.*	Depression on the R. frontal bone from the promontory. R. exophthalmos. Slight blood effusion under the conjunctiva.	44 years. Multip. Narrow pelvis. Forceps.
Berger	"Vier seltenere Fälle von Verletzung des Auges und seiner Umgebung." *Archiv f. Augenheilk.*, Bd. XVII.	Crushing of both globes.	Forceps delivery.
Steinheim	"Zur Kasuistik der Verletzungen des Auges und seiner Adnexe durch die Zangenentbindung." *Deut. med. Wochenschrift*, 1883.	Three days old child. Broad tear above the nasal ridge down to the bone. Tear through the L. upper eyelid. In the ext. angle of wound, a gaping wound extending to the bare orbital wall into a deep hole, filled with pus and necrotic tissue. Crushing of the eyeball, which was in its normal situation. Cornea became infiltrated with pus in the course of the next day. *Exitus lethalis.*	Forceps.
Jardine	*Lancet*, 1901, I, p. p.480, and "Opacity of the cornea in new-born infants," *Brit. Med. Journ.*, 1902. L., p. 868.	(*a*) Opacity of the cornea. Child some hours old. (*b*) Fracture of the orbital wall. Hæmorrhage into the orbit. Opacity of the cornea. (*c*) Corneal opacity. Blood extravasation into the anterior chamber. (*d*) Corneal opacity.	In all cases, difficult forceps delivery, usually in Walcherian hanging position (legs hanging down in extended position).

Author.	Reference.	Condition of Child.	Details of Labour.
Thomson	"Keratitis in the new-born." *B.M.J.*, 1901, II, p. 1473.	Three cases of corneal opacity.	In all, narrow pelvis and forceps.
Pfuhl	*Jahresber.* for 1881. *Charité Annalen.*, 1883.	Keratitis. Pressure marks on R. external eye angle.	Forceps delivery.
Fejér	"Ödem der Hornhaut beim Neugeborenen nach Zangengeburt." *Centralbl. f. prakt. Augenheilk.*, 1904.	Crushing of the eyelids and coursing of blood under the conjunctiva. Cornea entirely milky. Traces of an injury at limbus only.	According to Fejér's view, through direct pressure of the forceps used in this case.
Noyes	"Traumatic keratitis caused by forceps delivery of an infant." *Transact. of the Amer. Ophthalmol. Society*, Session, 1895. Quoted from de Wecker.	Corneal opacity and slight irritation of conjunctiva. Lids slightly swollen.	Narrow pelvis. Forceps. Difficult labour.
de Wecker	*Loc. cit.*	Three cases of corneal opacity, in 2 cases affecting the upper half, and in one case the whole of the cornea.	Through forceps pressure.
Servel	*Loc. cit.*	Paralysis of the facial. Both sides. Corneal opacity. L. subconj. blood effusion and R. slight exophthalmos.	Narrow pelvis. Forceps.
Thomson and Buchanan	*Loc. cit.*	Deep forceps marks over R. corner of the eye. R., corneal opacity. L., blood effusion in the anterior eye chamber. Intracranial hæmorrhages.	Forceps. Very large child. Stillborn.
Thomson and Buchanan	*Loc. cit.*	R., corneal opacity. Blood effusion in the anterior chamber. Retinal hæmorrhages. L., retinal hæmorrhage.	19 years. Primip. Narrow pelvis. Very difficult forceps extraction. A blade of the forceps lay over the external angle of the R. orbit.

Author.	Reference.	Condition of Child.	Details of Labour.
Dujardin	"Keratite obstétricale," *Journ. de Méd. et Chir. pratiques*, p. 189, 1897. Quoted from Truc.	Left keratitis. Hyperæmia of the conjunctiva, with chemosis.	Narrow pelvis. Forceps. Energetic traction.
Truc	*Loc. cit.*	Four years old child. Right, convergent strabismus. Leucoma of the cornea. Left eye normal.	Leucoma was the result of a forceps delivery. A blade of the forceps lay over the eye and orbit.
Cones	"An unusual cephalhæmatoma." *Boston Med. and Surg. Journal*, Vol. 140, 1899, p. 10.	Cephalhæmatoma at the frontal bone to the left of the midline, and marked ecchymosis about the right eye.	Forceps delivery.
Bylsma	"Ein Geburtsverletzung des Auges." *Wochenschr. f. Therapie und Hygiene des Auges*, No. 45, 1901. Quoted from Sidler-Huguenin.	Effusion of blood in the anterior chamber, with iridodialysis.	Forceps delivery.
Klauer	*Jahresber. für* 1894-5. *Charité Annalen*, 1896.	Blood effusion in the anterior chamber.	After forceps.
Volkmann	*Jahresbericht für* 1895-98. *Charité Annalen*, 1899.	Marked blood effusion in the left anterior chamber.	Primip. Normal pelvis. II vertex position. Forceps.
Hochstelter	*Jahresbericht*, 1893-94. *Charité Annalen*, 1895.	Blood effusion in the anterior chamber.	Forceps.
Lepage	*Thèse de Paris*, 1888. Quoted from Servel. (Case XI).	Impression on the R. frontal bone. Paralysis of the facial. Subconjunctival effusion of blood in the L. eye.	Ricketty pelvis. Forceps.
Thomson and Buchanan	*Loc. cit.*	R. sided hæmorrhage in the conjunctiva. Blood in the ant. chamber. Left conjunctival hæmorrhage. Œdema of the retina. Fracture of the L. frontal bone.	Narrow pelvis. Very difficult forceps. 28 years. Multip.

Author.	Reference.	Condition of Child.	Details of Labour.
de Beck	"Atrophie de la papille consécutive à une délivrance par le forceps." *France Médicale*, 1889. P. 1229. Quoted from Truc.	39 years. L. divergent strabismus, with dilatation of the pupil. Typical white atrophy of the optic nerve papilla. The condition has existed from birth. Definite skull depressions, one over the L. eye and one on the R. over the occipital protuberance.	A result of forceps delivery.
Sidler-Huguenin	*Loc. cit.*	One year. Has squinted with the R. eye for more than 3 months. Deep scars on the R. temple and behind the L. ear. Rather marked convergence of the R. eye. Nystagmus with small excursions. Marked atrophic pallor of R. papilla and less marked, distinct paling of the L. papilla also.	Difficult forceps delivery.
Koppen	*Ophthalm. Klinik*, 20 Okt., 1902. Quoted from Sidler-Huguenin.	Atrophia nervi optici and microphthalmos.	In connection with difficult forceps delivery.
Simeon Snell	*Loc. cit.*	Œdema of the eyelids. Conjunctiva of the left lower lid pushed forward like a tumour in front of the palpebral border.	Probably II vertex presentation. Forceps.
Schmidt-Rimpler	"Die Erkrankungen des Auges in Zusammenhang mit anderen Krankheiten." In Nothnagel's *Spez. Path. u. Ther.*, 1898, Bd. XXI, S. 526.	Congenital weak sight. Choroidal tear. After birth the eye remained closed for several days with swollen lids.	Delivery completed by forceps. Schmidt-Rimpler thinks that it is very likely that the choroidal tear was due to the forceps pressure.

Author.	Reference.	Condition of Child.	Details of Labour.
Miziono	"Augenaffektion durch Zangengeburt." *Mediz. Gesellsch. in Tokio.* Sitz. vom 20 Jan., 1904. Ref. in *Deutsche med. Wochenschr.*, 1904. Nr. 43.	Still-born large child. Besides considerable meningeal hæmorrhage, there were hæmorrhages in the suprachoroid, marked hyperæmia of the iris and ciliary body, dilatation of the veins of the retina and in the optic nerve.	Forceps extraction. Small pelvis.
Steinheim	*Loc. cit. Deutsche med. Wochenschr.*, 1883.	Four months' old child; in the left eye very marked ectropion of the lid. After birth it was seen that the external part of the upper lid was torn away.	According to the mother, the child was delivered by forceps.
Truc	*Loc. cit.*	Two years' boy. Since birth, paralysis of the upper branch of the R. facial, ptosis of the lower lid, with ectropion and lacrymation.	Result of forceps delivery. One of blades had lain over the lower lid and had there produced an extensive crushing.
Truc	*Loc. cit.*	Four years. After the birth there were enormous swelling and effusion of blood in the lids. Now in the region of the inner corner of the eye a scar, arising from a forceps tear. Convergent strabismus.	Forceps delivery. The forceps had grasped the skull in the direction from before backwards.
Nadaud	"Les paralysies obstétricales des nouveau-nés." Paris, 1872.	Two cases of oculomotor paralysis.	Through forceps pressure.
Berger	*Loc. cit.*	Congenital paralysis of the lev. palp. sup. and of the rect. superioris.	Injuries probably caused by forceps extraction. Multip. 3. (1st delivery, perforation; 2nd delivery, child carries a scar on the R. frontal bone from forceps pressure.) With this delivery the forceps had to be applied 3 times, since they slipped off twice.

Author.	Reference,	Condition of Child.	Details of Labour.
Bloch.	"Abducenslähm. durch Zangengewalt, etc." *Centralbl. für prakt. Augenheilk.*, 1891.	(6 years old.) Inward squint of the left eye, which was first observed in infancy. On the left malar bone and on the right side of the lower jaw, scars down to the bone, arising from forceps delivery. L. abducens paralysis, atrophy of the optic nerve, and pigment formation in the retina.	All 4 deliveries of the mother were difficult. The first 2 had to be completed with forceps. With the 4th (this child) there was especial difficulty. Repeated attempts with the forceps. The obstetricians (Hoffmeier, Raschkow) give, as the hindrances to birth, abnormal size and shape of the infant's head.
Bloch	*Ibid.*	(10 years old.) Squint since earliest childhood. At the end of the 1st week of life, inward squint of both eyes was noticed. Over the left parietal bone 3 scars down to the bone, a superficial scar in the skin at the R. external angle of the eye.	Primip. Very difficult forceps extraction.
Bloch	*Ibid.*	(11 years old.) The left eye can hardly be moved to the left beyond the midline. Scar at the R. angle of the eye.	Primip. Very difficult forceps delivery. The forceps were put on 3 to 5 times.
Fritsch	"*Klinik der geburtsh. Operationen.*" Halle, 1894, S. 266.	Fracture of the orbital arch.	Caused directly by the forceps on the head in a transverse position.

(*To be continued.*)

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—THE PATHOLOGY AND TREATMENT OF MYOPIA.

Sattler, Professor.—The pathology and treatment of myopia; being the Bowman Lecture, delivered Friday, June 14th, 1907. *Transactions Ophthalmological Society* U.K., 1907.

It is not possible in an abstract to do justice to Sattler's Bowman lecture on myopia. One must be content, therefore, to select the principal points, leaving the interested reader to consult the original, which he will find it well worth his while to do. Sattler, in the first place, deals with the normal growth of the eyeball, shows how the hypermetropia at birth gradually decreases, until between the sixth and twelfth years of life about three-quarters of all eyes have reached emmetropic refraction or nearly so. After touching upon curvature myopia and stationary low myopia, the author passes on to the consideration of the progressive form. There are essentially two conditions upon which the development of myopia may depend: (1) a number of mechanical factors; and (2) predisposition. The mechanical factors are the convergence and lowering of the visual lines, associated with a stooping posture. Sattler considers that, as regards accommodation, it has been proved conclusively by Hess and by Heine that there is no increase of intraocular tension during accommodation. In close work the eye is under the influence of several combined innervations, *viz.*: (1) convergence; (2) depression of the visual plane; (3) associated lateral movement; (4) finally, under a more complicated innervation necessary for maintaining the position of the vertical meridians of the retina according to the different positions of the visual lines. Occupations which require a steady, symmetrical convergence, associated with depression of the visual plane, are not so prone to produce and to promote myopia as those which are connected with a continual wandering of the visual lines, as reading, writing, etc.

Sattler has found by many measurements that it is the part of the eyeball behind the insertions of the muscles which alone becomes elongated in myopia, thus contrasting with the uniform bulbar enlargement from increased intraocular tension in

infantile hydrophthalmia. The author goes on to describe the progressive changes which take place in the coats of the eyeball as the result of the complicated forces which bear upon the sclerotic, which latter in the infantile eye is rather thin and much more distensible than in the adult. White patches are, in his opinion, to be attributed to little rents in the membrane of Bruch, whereby the underlying capillaries so closely connected with it are damaged and replaced by connective tissue. All these changes are going on without any perceptible signs of inflammation, and inflammation is by no means the prime cause of the appearances described by the term sclerotico-choroiditis posterior. In cases with obvious choroiditic changes these are to be considered as a complication which ætiologically has nothing to do with the progression of myopia, although it is not improbable that some changes in the blood-vessels connected with the stretching of the choroid may create an increased tendency to the deposition of microbes or to the action of toxins that may happen to be in the blood.

As to the question why only some eyes become myopic under identical mechanical factors, we must answer "predisposition," and a mighty factor in predisposition is "heredity." That which is inherited is a defective resistance of the sclerotic in the posterior part of the eye. The author enlarges upon the subjects of heredity, consanguinity, and debility during convalescence, associated with much close work in an unfavourable posture, as factors in predisposition. He does not consider that there is either a sex or a race predisposition. The prevalence of high myopia in women is to be attributed to occupational strain, and the racial myopia of the Germans to a similar cause. Myopia in the uneducated, and progression taking place in more advanced life, are touched upon; and the author asserts his opinion that there can be no sharp distinction between two essentially different kinds of myopia, a pernicious one and another acquired by school work, the former being a real disease, and the latter perfectly harmless.

This leads up to the question of prevention and treatment. Sattler's experience leads him to proclaim that, with full correction, strictly combined with instructions as to stooping, etc., we are able to check the progression of myopia, or at least to render it much slower. The eyes should be frequently re-examined, and even if something under full correction is given at first, it may be possible, if the myopia is not too high and the patient under twenty, to give the full correction at the end of six months or a year. "I have got the impression," says Sattler, "that under full correction—or nearly so in high degrees of myopia—the eye is less exposed to the more serious choroidal

and retinal complications. In such cases stooping must be absolutely avoided."

Regarding operative treatment, reference is made to the author's paper at the International Medical Congress, Lisbon, 1906: "I only wish to say that discission of the transparent lens ought to be entirely abandoned, and extraction with a curved lance-shaped knife adopted. Not only in myopia, but also in zonular and other forms of soft cataract, this operation is infinitely superior to discission. This one operation, mostly followed at an interval of a week or so by one discission of the secondary cataract, is sufficient to obtain a clear pupil in a fortnight or little more." ERNEST THOMSON.

II.—SAPROPHYTES IN OCULAR INFECTIONS.

Bietti.—Saprophytes in ocular infections. *Annali di Ottalmologia*, Vol. XXXV (1906), Fasc. 7 to 9, pp. 517 to 620.

Bietti's article is an elaborate one, for his conclusions cover 220 inoculation experiments on the eyes of the rabbit with *sarcina lutea*, *oidium albicans*, *bacillus violaceus*, *bacillus radici formis*, *bacillus megatherium*, *bacillus subtilis*, *bacillus mycoides*, *bacillus acidi lactici*, *bacillus fluorescens liquifaciens*, *bacillus candicans*, *bacillus luteus*, *and vibrio proteus*. It should be read in the original; we can only here note the conclusions. Having recapitulated the researches which prove the *rôle* of *bacillus subtilis* in ocular pathology, and those of Gifford, Perles, Lobanow, and Uhlrich on a number of micro-organisms which are much less active or entirely harmless to the eye, Bietti explains the *technique* of his experiments. The results showed that most saprophytes are really harmless to the eye, contrary to the conclusions of Uhlrich. Apart from *bacillus subtilis*, the virulence of which is not in doubt, and several micro-organisms of the same group (*bacillus radici formis*, *bacillus megatherium*, *bacillus mycoides*), the analogy of which with *bacillus subtilis*, inspires a certain amount of reserve, the *bacillus violaceus* and *bacillus acidi lactici* should be considered as true saprophytes. Still more certainly harmless are *sarcina lutea*, *oïdium albicans*, *vibrio proteus*, *bacillus luteus*, and *bacillus candicans*. *Bacillus fluorescens liquifaciens* requires, perhaps, some reserve on account of its analogy with *bacillus pyocyaneus*, which has been proved pathogenic for the eye. Among all these saprophytes only the *bacillus luteus* and *sarcina lutea* have been found in the normal conjunctival sac. As regards post-operative infectious processes,

then, it would be unlikely that the micro-organisms in question would play a part, although they might be found in secondary infections from severe penetrating wounds, especially when a foreign body of some size carries in and leaves in the interior of the eyeball, a considerable quantity of the ordinary saprophytic micro-organisms of air, water, or soil. No clinical facts, aside from cases of panophthalmitis due to bacillus subtilis, are available up to the present to confirm this theory. A. ANTONELLI.

III.—OPHTHALMOSCOPIC EXAMINATION OF THE CILIARY REGION.

Trantas, A.—Ophthalmoscopy of the ciliary and the retro-ciliary regions. (Ophtalmoscopie de la région ciliaire et rétrociliaire.) *Archives d'ophtalmologie*, septembre et octobre, 1907.

Ophthalmoscopic examination, as well known, is impossible as regards that portion of the fundus oculi which corresponds with a zone extending 8 mm. or 8·5 mm. around the limbus. In other words, the ciliary region, the ora serrata, and 1 mm. or 1·5 mm. of the choroid and retina are ultra-ophthalmoscopic, as it were.

In the present communication, which extends to nearly fifty pages of the *Archives*, **Trantas** reiterates the views he has formerly expressed,* which are to the effect that the regions in question are accessible to the ophthalmoscope, provided digital pressure is made upon the ciliary body and a plus 4 D. or plus 8 D. lens is placed behind the smaller mirror of the instrument. After some practice, an observer by adopting this plan can recognise the extreme periphery of the choroid and retina, as well as the ora serrata and the ciliary zone as far as the summits of the ciliary processes. This portion of the fundus has appearances in health and disease as variable and as characteristic as those of any other part of the back of the eye. Pathologically, indeed, it ranks second only to the posterior pole in importance as the site of morbid changes. Trantas points out that his plan can be carried into effect without the aid of cocaine or the necessity of mydriasis, unless it be at first, when the surgeon is not yet familiar with the procedure. The ungual surface of the thumb should be applied not direct to the eyeball but through the eyelid, the globe meanwhile being turned somewhat towards

* See THE OPHTHALMOSCOPE, 1906, p. 446.

the periphery. The easiest eyes to examine are those that are rather prominent and little pigmented.

Trantas enters fully into the ophthalmoscopic appearances he has found in the ciliary and retro-ciliary regions in various conditions, such as alcoholism, syphilis, leprosy, congenital amblyopia, malformations, myopia, traumatisms, vitreous hæmorrhage, synchisis scintillans, lenticular opacities, glaucoma, choroiditis, retinitis, optic neuritis, glioma of the retina, keratoglobus, and certain miscellaneous conditions. Speaking generally, these changes consist of atrophic or pigmented areas, which may or may not be associated with local extravasations of blood. A coloured plate illustrates the appearances seen in the ora serrata in alcoholic subjects. SYDNEY STEPHENSON.

IV.—LUMBAR PUNCTURE IN OPTIC NEURITIS.

Babinski and Chaillous.—On the therapeutic action of lumbar puncture in optic neuritis of intra-cranial origin. (Résultats thérapeutiques de la ponction lombaire dans les névrites optiques d'origine intra-cranienne.) *Ann. d'oculistique*, T. CXXXVIII, p. 1, juillet, 1907.

Babinski and **Chaillous** give histories of 8 cases of choked disc in which lumbar puncture was followed by amelioration in the subjective and objective symptoms. The optic neuritis was caused in 1 case by traumatic intra-cranial effusion, in 4 cases by meningitis, in 1 case probably, but not certainly, by meningitis, in 1 case by hydrocephalus and in 1 case by a cerebral tumour. In the first 5 cases the improvement was permanent, but in the remaining 3 it was only temporary. The cases of meningitis were treated with mercury in addition to lumbar punctures, but the good results obtained were so rapid and so free from relapses that they cannot be attributed to the action of the drug. From a study of these cases and of the cases of cerebral tumour which have come under their notice, in which lumbar puncture was not followed by any definite improvement in the ocular condition, the authors draw the following conclusions: (1) lumbar puncture should be considered as a curative method of treatment in cases of optic neuritis due to intra-cranial effusion, either traumatic or inflammatory, but in cases due to intra-cranial tumour it can be regarded only as palliative. (2) Whenever lumbar puncture is indicated it should be done with care, the following precautions being observed: (*a*) the patient should be placed in a horizontal position; (*b*) the cerebro-spinal fluid should be evacuated very

slowly drop by drop, and not more than 8 to 10 c.cm. should be removed at one time; and (*c*) the patient should stay in bed for several days after the operation.

The authors suggest that the good results following lowering of the intra-cranial tension by lumbar puncture support the theory of Deyl and Dupuy-Dutemps: that choked disc is caused by compression of the central vein in the dural sheath.

R. J. COULTER.

V.—RUPTURES IN DESCEMET'S MEMBRANE.

Coats, George.—The pathology of ruptures of the membrane of Descemet. *Transactions Ophthalmological Society* U.K., 1907.

Coats' paper extends to thirty-one pages of the *Transactions*, and includes (1) a historical account of the subject of ruptures of Descemet's membrane, (2) an account of personal observations on cases of which thirteen were buphthalmia, eight glioma with increased tension, and four myopia, and (3) notes of some of the actual cases. It appears that the condition was known anatomically (Becker, 1875) before it was recognised clinically (Haab, 1899). Grahamer (1884) saw ruptures in buphthalmia, von Grolmann (1887), in glioma. Wintersteiner (1896) studied the changes more minutely in a case of glioma. The writer refers to v. Hippel's case (1898) and to Thomson and Buchanan's cases of rupture of Descemet's membrane as the result of pressure at birth. He says "their mechanism is not obscure." The present reviewer begs leave to think that their *exact* mechanism *is* obscure. Haab first (1899) recognised the ruptures clinically in buphthalmia and Plaut (1900) in conical cornea. Faber (1905) first observed ruptures in myopia.

Turning next to Coats' personal observations, he failed to find ruptures in uncomplicated myopia, and states that undoubtedly they are rare in myopia because anatomical researches have shown that it is the posterior, not the anterior, part of the globe which stretches in this disease.* The writer proceeds to describe the histological features of these fissures, which are very various. The ruptured ends may lie in their proper position but separated by a small interval. The endothelium was always found intact over the gap. Sometimes the edges roll forward, or may form a spiral, as in traumatic ruptures. The endothelium may creep under the ruptured ends and lay down a new membrane. The processes which occur subsequent to

*See abstract of the Bowman Lecture in the present number of THE OPHTHALMOSCOPE, p. 719.

rupture are imperfect processes of repair by the deposition of new membranes or masses of similar substance from the epithelium. There may be a double or even a treble layer of Descemet's membrane, according to the way in which the endothelium creeps under the ruptured ends. All observers are agreed, says Coats, that the stretching of the cornea is the essential cause of rupture of Descemet's membrane which, while resistant to leucocytic invasion, has less power of resisting a stretching force than the corneal lamellæ The term "elastic" membrane is a complete misnomer. Lastly, some details are given of experiments made by Coats and E. T. Collins by injecting fluid (under chloroform) into the eyes of newly-killed rabbits. In spite of great pressure obtained within the eye they did not succeed in producing typical ruptures of Descemet's membrane. "This result might perhaps have been expected, since the conditions of such a short experiment are manifestly different from those existing when high tension is present over a period of months or years." ERNEST THOMSON.

VI.—GLANDERS OF THE EYE.

Dufour.—Ocular glanders: experimental researches on guinea-pigs. (La morve oculaire: recherches expérimentales sur le cobaye.) *Ann. d'oculistique*, T. CXXXVIII, p. 11, août, 1907.

Although human glanders is regarded as a rare disease, it is possible that it occurs more frequently than is believed. There are nine cases on record in which it resulted from ocular infection. **Dufour** after quoting briefly the histories of these cases and adding a tenth, previously unpublished, describes a series of experiments which he has carried out with a view to ascertaining the results of infecting the conjunctival sac with the bacillus mallei.*

The general plan of the experiments was as follows.—Infected material (secretion of a diseased animal or mixture of a culture of bacillus mallei with sterile bouillon) was dropped into the conjunctival sacs of guinea-pigs, the eyes of which were in some cases left intact and in others injured by abrading the conjunctiva or cornea. The animals were isolated and examined daily or twice daily. Autopsies were made as soon as possible

*The investigation was a continuation of one commenced by Professor Galli Valerian in 1897, but abandoned by him, as the disease spread among the laboratory animals, owing to insufficient isolation.

after death. Specimens were preserved in alcohol or in formol followed by alcohol.

In all, 37 experiments were made. In 12 of these no ocular lesion resulted. In the remaining 25 inflammatory phenomena appeared, usually commencing as conjunctivitis on the second or third day, and involving the cornea two or three days later. Unless the animal died sooner, the cornea was, as a rule, destroyed by ulceration in from six to ten days, but in three cases this did not take place for 15, 17, and 20 days respectively.

Excluding two complicated cases, the life of the remaining 23 animals varied from 12 to 39 days. The majority died between the 19th and the 30th day, and did not develop any general symptoms until a short time before death. The course of the ocular symptoms did not seem to be influenced by inoculation of the animal with glanders bacilli elsewhere—*e.g.*, in the peritoneal cavity.

The instillation of solutions containing large numbers of bacilli was always followed by ocular lesions, but when the solutions instilled were not so rich in bacilli, the results were inconstant. The virulence of the infective agent therefore appeared to have more importance than the quantity.

An agar culture three weeks old, but still capable of growth, was used for infecting the eyes of three guinea-pigs. As there was no sign of local or general development of the disease at the end of 24 days, a second instillation was then made, a fresh culture being used. This was followed by a very rapid development of both local and general symptoms, with death of the animals in from four to six days. These rapidly fatal issues may have been due to the action of the second instillation upon organisms in which a state of increased receptivity had been produced by the previous infection, but Dufour considers that they show that bacilli of little virulence entering by the eye can infect guinea-pigs without producing the local lesions which are found when the cultures used are fresher. He suggests that the infection took place through the nasal mucous membrane (and not through the conjunctiva), as has been shown by Roemer and Hirota to be the case when septicæmia is produced in mice by the introduction of infected material into the conjunctival sac.

In another case an equal quantity of infected material was instilled into each eye of a guinea-pig, fresh culture being used for the right, and old culture for the left. A week later the left eye was still healthy, but the right showed extensive lesions.

The existence of a wound of the conjunctiva or cornea did not appear to have any definite influence upon the development of ocular lesions, except that the lesions when present in such an eye, seemed to start from the wound. When the two eyes of the

same animal were infected, the one with, and the other without, a wound, both of them either remained free or developed lesions, but, as a rule, when lesions did occur they developed more rapidly in the wounded eye than in the other, although there was one instance in which the contrary was the case.

The macroscopic ocular lesions commenced as conjunctivitis with ulceration, at times preceded by an abscess in the lid. Later, the corneæ became infiltrated, ulcerated, and, finally, totally destroyed by suppuration. As a rule, this took place without check or intermission, but in three cases new vessels appeared and the corneæ showed a tendency to cicatrise and even to clear, but later on a ring of whitish nodules developed behind the corneæ, or in their deeper layers, and, by gradually enlarging, caused perforation. In one case a typical panophthalmitis developed, and in one case an abscess formed in the eyelid without any ulceration of the conjunctiva or cornea. The quantity of secretion varied much from day to day in the same eye, but was frequently very large.

Examination of the deeper parts of the eyes was, of course, impossible during life, but *post-mortem* exudation was frequently found in the anterior chamber. No nodules in the choroid or œdema of the optic nerve were seen, the author's results in this respect differing from those obtained by Tedeschi. The latter, however, used intra-ocular injections, and Dufour suggests that if his animals had lived longer, the deeper structures might have become involved. Microscopic examination of sections stained with hæmotoxylin and eosin and by van Gieson's method showed the following appearances :—

The conjunctival surface of the lids contained ulcers in various stages, their seat of election being the internal surface of the tarsus near the palpebral margin.

The corneæ were at times quite healthy, but in these cases the conjunctiva near the limbus was much infiltrated with polynuclear leucocytes or even ulcerated, thereby confirming the clinical observation that keratitis was preceded by conjunctivitis. The affected corneæ were from two to four times their normal thickness, all the layers being involved and appearing engorged with fluid. The interlamellar spaces were infiltrated with cells, which were most numerous immediately behind the epithelium and close to Descemet's membrane. The epithelium where present was normal, but at times it was absent entirely or in part, being replaced by a thick purulent deposit very rich in leucocytes, or leaving the proper corneal tissue bare. The most typical formations in the cornea were small round nodules from ¼ mm. to 1 mm. in diameter, situated at its periphery more commonly than at its centre. These commenced separately but

they were rich in cells of an amorphous mass of necrosing cell protoplasm containing some nuclei which stained badly. At times they were very numerous, forming quite a ring, and as many as five or six of different sizes and ages were seen in single sections.

In two or three cases the anterior part of the uveal tract was involved, the iris being thickened and its tissue infiltrated with very numerous leucocytes, while the space between it and the cornea was occupied by hypopyon. In one case Descemet's membrane was detached from the cornea and adherent to an intra-ocular purulent deposit.

No karyokinesis or giant cells were seen. Sections were stained for micro-organisms with Pappenheim's methylene-pyronin green, with fuchsin, and with various forms of methylene blue. The bacilli mallei when present were few in numbers, always isolated, and often deformed. They were situated between the cells, by which they were often concealed, and were most frequent in the necrosed tissues and on the surface of the conjunctival or corneal ulcers. No bacilli were found in the exudation, in the anterior chamber, or in sections of the liver or spleen. The stains used were Pappenheim's methylene-pyronin green, fuchsin, and various forms of methylene blue.

In the majority of the cases, cultures of the conjunctival secretion contained glanders bacilli, alone or mixed with other micro-organisms. In smear preparations of the conjunctival secretion the bacilli were, as a rule, few in number and difficult to recognise.

The autopsies showed that when infection took place through the eye alone, the animals usually died from general intoxication. The lesions most commonly found were paleness of the liver, engorgement of the spleen and glands of the neck, slight hyperæmia of the kidneys, and congestion of the lungs. In one case there was a purulent deposit on the surface of the liver, containing bacilli, and in another there were small white nodules on the surface of the peritoneum. Cultures from these nodules gave a positive result. In some cases there were small brownish-red spots on the surface of the liver, varying in diameter from one to ten mm. and having a depth of about one mm. There was no relation between the severity of the ocular affection and the occurrence of infected glands in the neck.

The death of the infected animals was due in some cases to spread of the micro-organisms through the tissues, with formation of secondary necrotic foci, but in others the organisms, without entering into the circulation, seem to have given rise to toxic products which, becoming absorbed, caused the death of the animals from marasmus. The following experiment is quoted

in support of the possibility of the latter hypothesis.—An animal received an intraperitoneal injection of ten c.c. of solution of a mixture of a pure culture in bouillon which had been heated to 100 c.c. for ten minutes, and died of marasmus in 30 days. At the autopsy nothing abnormal was found except paleness of the liver and a little fluid in the abdomen. Cultures made at the antopsy, and with the injected liquid at the time of the injection, gave negative results.

Cultures of the various diseased tissues of animals infected with living cultures of the glanders bacillus sometimes gave positive results. Intra-peritoneal injection of emulsions of these same tissues caused in one case death of the animal in eight days with typical symptoms, and in another, death of the animal in one month from marasmus, but in the latter case the glanders bacillus was obtained from the spleen of the animal.

Dufour draws the following conclusions from his investigation:

If the conjunctival sacs of guinea-pigs are infected with the virus of glanders, the animals always, or nearly always, contract the disease and die of it. The duration of life of a guinea-pig so infected is about three weeks. The eye is always infected if the bacilli instilled are numerous and virulent, but may escape if the culture used be old and contain few bacilli. For the production of a local lesion, the virulence of the bacilli is of more importance than their number. The local lesion takes the form of an intense conjunctivitis with extensive ulceration of the cornea and lids, and copious purulent secretion. The cornea contains glanders nodules. The bacillus mallei is, as a rule, found in the secretion several days after infection, but is usually accompanied by the common conjunctival micro-organisms. Death occurs from generalised infection or from marasmus caused by intoxication. Internal purulent foci are rare. A few isolated bacilli can be found in sections. The experiments, in conjunction with the recorded cases in human beings, show how easily infection with glanders can take place through the conjunctiva, and point to the advisability of calling attention of medical men to the ordinary lesions of glanders, and the danger of the disease both to the patient and those who come in contact with him.

R. J. COULTER.

VII.—OPHTHALMIA NEONATORUM.

Cragin, Edwin B.—The prophylactic and curative treatment of ophthalmia neonatorum: what silver salts should be used and of what strength. *American Journal of Obstetrics*, July, 1907.

Cragin said that one of the burning questions of the day was how to reduce the number of those who go through life handicapped in the race, or perhaps a burden on the State, on account of an impairment or loss of vision, the result of ophthalmia neonatorum. The solution of this problem concerned the treatment of the baby's eyes immediately following its birth, and as various methods of treatment had been used by the writer in his service at the Sloane Maternity Hospital, and as each method had been followed in a series of one or more thousand confinements, the comparisons of the results of the different methods was of interest.

Before taking up the individual methods of treatment, the writer noted the following general propositions:

"1. A baby which is premature, and of low vitality, is more liable to ophthalmia than one which is mature and vigorous.

"2. On the account of the dangers of contagion, babies congregated in a hospital are more liable to ophthalmia than babies under the same treatment and under the same obstetrician in private practice.

"3. The number of cases of ophthalmia in hospital service will vary somewhat with the class of cases admitted, but whatever the treatment employed, judging from the author's experience, a certain number of cases of ophthalmia will inevitably occur."

In the five methods of prophylactic treatment used by him at the Sloane Maternity, the smallest number of cases of ophthalmia in one thousand confinements had been seventeen, the largest thirty-four. Hence, with the present known methods of prophylaxis, in a hospital service of fifteen hundred confinements per year, in which emergency and ambulance cases were received, one must expect from fifteen to twenty-five cases of ophthalmia in each one thousand confinements.

By ophthalmia is meant a purulent conjunctivitis. The objects desired were, *first*, to reduce the number of cases, and, *second*, to have the disease as mild as possible when it occurred.

In cleansing the eye it was his custom to flush the eye from the inner to the outer canthus with boric acid solution by means of a medicine dropper; the outer surface of the lids being then bathed in the same direction with the same solution.

During the last seven years the writer had used a prophylactic measure in five different series of cases, five different silver solutions: nitrate of silver, 2 per cent.; nitrate of silver, 1 per cent.; protargol, 5 per cent.; argyrol, 10 per cent; argyrol, 20 per cent.

The results were as follows:

Series 1.—In 1,000 confinements, 2 per cent. nitrate of silver

solution; cases of ophthalmia, 18; eyes lost, none; opacities, none.

Series 2.—In 1,000 confinements, 1 per cent. nitrate of silver solution; cases of ophthalmia, 34; eyes lost, 1; opacities, none.

Series 3.—In 2,000 confinements, 5 per cent. protargol solution; cases of ophthalmia, 53; average per thousand, 26+; eyes lost, 1; opacities, 1.

Series 4.—In 2,000 confinements, 10 per cent. argyrol solution; cases of ophthalmia, 34; average per thousand, 17; eyes lost, 1; opacities, 2.

Series 5.—In 2,000 confinements, 20 per cent. argyrol solution; cases of ophthalmia, 54; average per thousand, 21+; eyes lost, none; opacities, none.

During the use of the two per cent. nitrate of silver solution, the irritation of the eyes with the accompanying œdema and discharge, the so-called "silver catarrh," was so great that not only did it occupy a great deal of the time of the nurses in applying compresses and irrigating the eyes of babies, but it seemed to him to be a source of danger, not only by leaving an irritated eye which might later become infected, but also by causing in the nurseries discharging eyes, from which the discharge might be carried by nurses to healthy eyes, and thus the infection produced. For this reason, although no eyes were lost in this series, and as far as known, no opacities produced, the strength of the nitrate of silver solution was reduced from two per cent. to one per cent.

The original cost of the argyrol solution was much greater than that of the nitrate of silver solution, but when one considered the greater staining and injury to towels, sheets, etc., and the greater demand upon the nurses in the use of the solutions of nitrate of silver, it had seemed to the writer that, viewed at the end of a year, the tax on the treasury of the hospital from the use of argyrol was but little, if any, greater than from the use of nitrate of silver.

The author detailed a series of very careful investigations concerning the bactericidal power of silver salts used in the different series. The tests were made with the *Staphylococcus pyogenes aureus, the Streptococcus pyogenes*, and the gonococcus. From the tests made it was evident that in the solutions usually employed argyrol had practically no bactericidal powers over the streptococcus or staphylococcus, but with the gonococcus, in strengths of 20 per cent. and 30 per cent., it was perfectly efficient. So long as a 20 per cent. argyrol solution was efficiently bactericidal with the gonococcus in thirty seconds, so long as the gonococcus was the coccus most feared in the ætiology of

ophthalmia neonatorum; and so long as the clinical results were practically as good as with the use of two per cent. nitrate of silver, and better than with the one per cent. nitrate of silver, and this without the annoyances of silver irritation and staining, the writer felt justified in using and in advocating the use of argyrol as a prophylactic against ophthalmia neonatorum.

In the curative treatment of ophthalmia neonatorum, the writer had also found argyrol of great value. The absence of irritation in strong solutions, the fact that these solutions might be dropped into the eye at short intervals by the nurse without injury to the eye, and the fact that these solutions were bactericidal to the gonococcus, were all in its favour. The writer's present plan of treatment consisted of frequent irrigations of the eye with boric acid solution (every fifteen to twenty-five minutes during the stage of active purulent discharge), cold compresses, and the instillation of argyrol, 30 per cent. every two to four hours.

Since the completion of the bactericidal tests referred to, the writer felt that, in spite of its many good qualities, argyrol left much to be desired in the treatment of ophthalmia when due to the streptococcus or staphylococcus. It was well-known that some of the worst cases of ophthalmia were due to streptococcus infection, and it was hoped that in the near future a silver compound would be found which would possess the blandness of argyrol, and be as germicidal to the streptococcus and the staphylococcus as was argyrol to the gonococcus. In the meantime it would seem wise, in severe cases of ophthalmia neonatorum, which resisted the treatment by argyrol, boric irrigations, and cold compresses to make occasional use of nitrate of silver, one to two per cent. solutions. The use of all silver compounds, even argyrol, may be continued too long, and the discontinuance of the silver solution, with the use of boric irrigations, might bring about a speedy recovery.

VIII.—TUBERCULOSIS AND EYE DISEASE.

(1) **Stock, W.—Tuberculosis as a cause of chronic inflammations of the eye and of its adnexæ, especially of chronic uveitis. (Tuberculose als Ætiologie der chronischen Entzündungen des Auges und seiner Adnexe, besonders der chronischen Uveitis.)** von Graefe's *Archiv f. Ophthalmologie*, Bd. 66, 18 Juni, 1907.

(2) **Bull. Charles Stedman.—The value of tuberculin T R. as a diagnostic and therapeutic agent in the recognition and treatment of tuberculosis of the eye, with report of cases.** *Journ. Amer. Med. Association*, August 3, 1907.

(1) The initial fact from which **Stock** starts is the multiplicity of the clinical manifestations which we get from artificial infection with the B. tuberculosis, according to the means of inoculation which we employ. By introducing the virus into the blood circulation—Stock injects into the auricular vein in rabbits—we get a much more attenuated form, similar to Leber's form, than we do by implantation into the anterior chamber. This point is also of some clinical importance, for by performing iridectomy in tuberculous iritis, we may, as Stock points out, disturb the bacilli and exchange the attenuated form of endogenous tuberculosis for the virulent form of implantation-tuberculosis an observation that may account for the flaring-up of a more or less quiet iritis after surgical interference.

The most important fact with regard to endogenous experimental tuberculosis is the remarkable absence of anatomical characteristics. Indeed, as Stock remarks, nobody would have suspected the real nature of the cases had it not been for their history and the presence of bacilli in the lesions. The clinical manifestations of the disease are fairly variable. The most common form is nodular iritis, rarely appearing before the eleventh day after inoculation, and sometimes combined with interstitial keratitis; choroiditis, with its seat of predilection near the equator, which might go on to caseation, to softening and ectasia of the sclera, and to deep marginal keratitis; in rarer instances nodular affections of the conjunctiva; and once an infiltration within the tarsus, similar to a chalazion.

The clinical importance of these experimental results is considerable, although Stock is constrained to admit that the histological examination of human eyes with chronic iridocyclitis leads rarely, and implantation of bits of iris in his cases never, to positive results. In default of this he is inclined to attach considerable importance to the results of injection of old tuberculin (T.V.) for diagnostic purposes. Only, he insists on the importance of being completely guided by Koch's original directions, *viz.*:—"The temperature of the patient must be "watched for one—better for two days—and if over 100° F. no tuber-"culin test is admissible. If the case proves suitable, the patient "gets an injection of from 0.1—1.0 mgr. of tuberculin under the "skin of his back in the morning.* Should reaction not ensue we "give the double dose, not the next day, but the day after. But

* Stock does not now give under 1·0 mgr. except in children.—R.G.

" should there be any rise of temperature, even the slightest, we " do not increase the dose, but repeat it after the temperature has " become normal again ; this time the reaction will be stronger " than the first time, which is one of the surest signs of the " presence of tuberculosis. In case the first small doses do not " give a positive result, we increase the dose to 5·0 mgr. and, " finally, to 10·0 mgr. The latter dose is repeated twice, and " only if there is no reaction after that, do we feel justified in " excluding any recent or progressive tuberculous affection."

Of 76 patients with chronic uveitis, whom Stock has thus examined, a positive result was arrived at in 45 cases. Local reaction (ciliary injection, photophobia, etc.) there was in seven cases. If a patient does not react on T.V. and we find any other possible ætiology (rheumatism, syphilis, etc.), the case is not considered tuberculous. Should he react and another of the aforesaid systemic diseases be present as well, Stock advises us to treat the latter before resorting to tuberculin treatment. For diagnostic purposes he also attaches importance to the presence of pale, greyish, hardly-visible nodules in the iris, near the minor circle, without much injection, as compared with the dark-brown inflammatory papules of syphilis.

With regard to treatment in tuberculous cases, Stock records excellent results from " neo-tuberculin (T.R.) " injections. He follows v. Hippel in his dosage, beginning with $\frac{1}{5000}$ mgr., increasing by $\frac{1}{5000}$ mgr. every other day up to $\frac{1}{50}$ mgr., then by $\frac{1}{50}$ mgr. to $\frac{1}{5}$ mgr., and then by $\frac{1}{10}$ mgr. up to 1·0 mgr., always assuming that there is no fever beyond 100°F.. Otherwise, the lesser dose is repeated until no reaction ensues. R. GRUBER.

(2) **Bull's** cases were all from private practice and were those involving the lids or the conjunctiva, cornea and iris. He has not used tuberculin injection in any case of tuberculosis of the choroid or retina. Of the ten cases reported, four were of tuberculosis of the eyelid, one or both : three were cases of tuberculosis of the conjunctiva, which involved the episcleral tissue and the sclera secondarily ; one was tuberculosis of the cornea ; and two were tuberculosis of the iris. In both the latter cases the cornea and ciliary body were involved.

In the observation and continued treatment of these cases he has come to the same conclusions as v. Hippel.* It is all-important to continue the injections for a somewhat lengthened period—several months—in order to prevent the occurrence of relapses. They must be continued until all nodules have been replaced by cicatricial tissue, all ulcerations are healed, until the swelling and vascularity of the iris have disappeared, and until all deposits on

* v. Graefe's *Archiv f. Ophthalmologie*, Bd. 59, 1, August 9th, 1904. For abstract see THE OPHTHALMOSCOPE, 1905, p. 242.

the posterior surface of the cornea and all opacities in the vitreous have been absorbed. In some cases the treatment, with occasional interruptions, must last five or six months.

"By this treatment," Bull says, "the tubercle bacilli are not killed, but the tuberculin T.R. excites a reactive inflammation in the surrounding tissue, in which scar tissue is formed. This should be the object of the treatment, and is best obtained, as v. Hippel states, by the use of small, gradually ascending doses of T.R., which cause no apparent increase in the inflammatory symptoms. Relapses are frequent, but become less likely to occur if the treatment is carried out for months." Bull is not prepared to accept the very optimistic dictum of v. Hippel, that "this remedy, properly handled and employed for months, will cure the severest cases of ocular tuberculosis with maintenance of vision." He believes, however, that "it is a remedy of considerable value, and that in small doses, properly employed, it will not act unfavourably on the general health. By this method, in the course of two or three weeks, the ciliary injection diminishes, the deep corneal opacities begin to clear up, the nodules in the iris grow smaller and less vascular. In the course of the second or third month the ciliary injection disappears, the cornea becomes transparent, or nearly so, the nodules disappear from the lids, the sclera, or the iris, and a grey cicatricial tissue takes their place. The vitreous opacities last much longer, and may never entirely disappear." C. A. O.

IX.—ANÆSTHESIA, LOCAL AND GENERAL.

(1) **Theobald, Samuel.—Indications for the employment of adrenalin chlorid, in conjunction with cocain, in operations on the eye.** *Journ. Amer. Med. Assocn.* 27th July, 1907.

(2) **Segelken, H.—The scopolamine-morphine anæsthesia in ophthalmic practice.** (Die Skopolamin Morphium-Narkose in der Augenheilkunde.) *Klin. Monatsbl. f. Augenheilkunde*, Juli, 1907.

(3) **Marin, Amat.—Local anæsthesia of the lids by means of a mixture of stovain, adrenaline, and acoin.** (Anestesia local en las operaciones de los parpados, producida por la asociacion de la estovaina, adrenalina, y acoina.) *Archiv. de Oftal. Hisp.-Amer.*, Sept., 1907.

(1) For several years, as a matter of routine, Theobald has employed adrenalin chloroid, in conjunction with cocain, in many operations on the eye. At first this was done solely to

lessen hæmorrhage, but for some time he has used it, not only for this purpose, but because it soon became evident that through its action the anæsthetic effect of the cocain was definitely increased. He tells us that "in operations on the cornea and conjunctiva the anæsthesia produced by cocain is, as a rule, so complete as to leave little to be desired, but this cannot be said of certain other operations, notably those done for the removal of chalazion or other tarsal cysts. Here, where much is to be desired in the direction of more perfect anæsthesia, adrenalin has proved of undoubted value." He says, however, that in operations involving the making of a corneal section, especially cataract extractions and iridectomies, with the exception of iridectomy done during an attack of inflammatory glaucoma, experience has taught him to be rather chary in using adrenalin. "For, though," he says, "I have employed it several times in cataract extraction with no ill effect, I have felt more than once that the operation was complicated by its use." In operations for pterygium, adrenalin seems to him to be contra-indicated, because its blanching effect renders the outlines of the growth difficult of recognition, and, besides, the anæsthesia from cocain alone is all that could be wished for. C. A. O.

(2) **Segelken** has seen such uniformly good results from general anæsthesia brought about by subcutaneous injections that he recommends this method, instead of inhalation-anaesthesia, in all cases except in young children. The solution employed is "Skopomorphin," in sterilized glass tubes, of the firm, J. D. Riedel, Berlin. It has the following constitution :—

Scopolamin hydrobromic. - -	0·0012
Morphin. hydrochl. - - -	0·03
Aq. dest. ad - - - -	2·0

Two injections of a third of this solution are given in all. First, the patient is asked to drink a greater quantity of tea or coffee, in order to counteract the drying effect of scopolamin on the mucous membranes. Three hours before the commencement of the operation the first injection is made ; it causes a tired feeling. The second injection follows after one-and-a-half hours ; it sends the patient to sleep. After a further lapse of one-and-a-half hours, and the instillation of a few drops of cocaine, the operation starts. The pupils are found to vary ; both conditions, myosis and mydriasis, occur, according to the predominant effect of morphine or scopolamine. C. MARKUS.

(3) **Marin** has used the mixture of stovain, adrenaline, and acoin in a number of cases, and considers that it has very great advantages over subcutaneous injections of cocain. He has employed it in considerable quantity, where more than one operation was required at the same time, without encountering

any symptom of intoxication. The addition of the adrenaline is of help in producing a bloodless field of operation, and the acoin seems to increase the power of the stovain. The anæsthesia is very complete. H. B. GRIMSDALE.

X.—RING SCOTOMA.

Hancock, W. Ilbert.—Ring scotoma. *Royal London Ophthalmic Hospital Reports*, Vol. 16, Part 4.

In this communication, **Hancock** describes three cases of ring scotoma. The first case was that of a lady, aged 26 years, who was first seen in November, 1904. It appears that rather more than two years before she was struck by a flash of lightning which rendered her unconscious, but which did not burn her face. When she recovered, in about an hour, she was quite blind. On the following day both eyes were much inflamed. The sight of the right eye had quite returned, but the left was still blind. In about ten days the sight of both eyes was as good as ever. When seen by Hancock two years later, she complained that with the left eye things had a dark outline, and although the vision in each eye was normal, yet with the left there was a large ring scotoma extending completely round the disc and macula.

Case 2 was in a man, aged 46 years, who complained that his right eye had been failing for six weeks. At this time the vision was only hand-movement. There was a large central scotoma with a normal peripheral field. He was treated with blisters and iodide and the sight rapidly improved to 6/9; the disc was very pale, especially on the temporal half. A ring scotoma was present.

Case 3 was in a man, aged 28 years, who complained of night blindness. He had first noticed it eight years before, but for the last two years it had become much worse. Others of the family were affected. He had a ring scotoma in both eyes, and the fundi were typical of the condition known as retinitis pigmentosa sine pigmento.

The literature of the condition is fully discussed, also the various theories which have been put forward to account for the condition. Evidence is, however, still wanting before the true explanation can be said to be settled. The paper is most carefully written, and the facts and theories are clearly stated.

C. D. MARSHALL.

XI.—SPRING CATARRH.

(1) Roy, Dunbar.—Vernal conjunctivitis in the Negro. *Ophthalmic Record*, October, 1905.

(2) Pascheff.—The clinical signs and pathological anatomy of spring catarrh. (Clinique et anatomie pathologique du catarrhe printanier.) *Archives d'ophtalmologie*, mars, 1907.

(3) Schieck, F.—Contribution to the pathology and pathological anatomy of spring catarrh. (Beitrag zur pathologie and pathologischen Anatomie des Frühjahrs-katarrhs.) *Klin. Monatsbl. f. Augenheilkunde*, Mai-Juni, 1907.

(4) Antonelli, A.—A contribution to the study of spring catarrh. (Contribution à l'étude de la conjonctivite périodique végétante: catarrhe printanier.) *Archives d'ophtalmologie*, juillet, 1907.

(5) Butler, T. Harrison.—Some cases of vernal catarrh. *Lancet*, 9th November, 1907.

(1) **Roy**, in an excellent article upon this mooted subject, states that the principal alterations found in his own cases, were—"1. Localized thinning of the surface layer of epithelium; the swelling and vacuolization of many of these elements; the presence of eosinophile cells between these elements.

"2. The projection downward into the deeper structures of club-shaped columns of epithelium containing usually more or less centrally located cavities.

"3. The presence in these cells of peculiar bodies which may be the result of degeneration of these bodies, or possibly parasites.

"4. The presence between these columns of enormous numbers of plasma and lymphoid cells, quite a number of eosinophile cells and some newly-formed fibrous tissues."

He says that "the type of these cases was so characteristic and the results in the treatment so unsatisfactory that one was compelled to recognize them as a distinct entity." The fact that such patients always applied for treatment during the warm months made him recognize the disease as characteristic of this season. Nor was this affection, he states, limited to those with frail constitutions, or to such as presented symptoms of "scrofula" or hereditary syphilis; but in most cases they were in subjects who appeared healthy in every other respect. In two cases the patients belonged to the same family, but his observations do not lead him to the conclusion that it is hereditary.

"The extent of the circumcorneal lesion varied greatly. In some the gelatinous lymphoid elevation was so slight that it could only be seen by having the light to fall upon the eyes at a certain angle, while in others the cornea would be encroached upon to the extent of several millimetres. In those cases where the disease had been periodically present from one to three years, and which were seen during the interval, *i.e.*, during the winter, the peripheral edges of the cornea showed changes resembling arcus senilis, indicating that the superficial layers of the cornea were also involved in the pathological process. Several cases were seen where the active process had ceased previously and only this latter condition remained," but such cases are not considered in his paper.

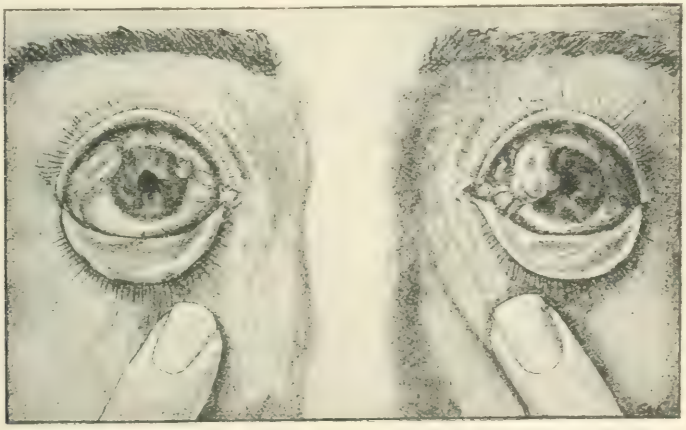
In his cases "mild applications were used, caustics were tried, and even surgical intervention was resorted to. In three of the worst cases, where the circumcorneal gelatinous mass was the largest, this was shaved off with a knife and afterwards the surface touched with a strong solution of nitrate of silver. This was successful in seeming to arrest the progress of the disease. By the use of a mild astringent wash of sulphate of zinc, adrenalin chlorid, and water, together with the daily massage of the eyeball with yellow ointment, the acute symptoms could usually be kept under control until the cool weather would cause a cessation entirely of the acute process." "Under such treatment" he "found that the severity of the symptoms decreased each season, and after three or four years there was very little trouble." He states that "whether the remedies used were responsible for this improvement or that the disease is more or less self-limited and runs its own course, I am unable to say. In the severest forms, *i.e.*, where the ring of hyperplasia is very broad without any marked acute inflammatory congestion, I am fully convinced that surgical removal of the hyperplasia is the best mode of procedure to be followed with continuous application of milder remedies." C. A. OLIVER.

(2) **Pascheff** has an elaborate communication on spring catarrh, of which he has seen 93 cases (83 males and 10 females) in Sophia, Bulgaria, where he practises, since the year 1900. Seventy-seven of the cases occurred in patients under 20 years of age. As regards social position, 54 of the cases were met with in burgesses and 39 in peasants. Most of the cases came under notice in the months of April, May, and June. The symptoms, which were closely dependent on solar light, appeared with the first heat, diminished in autumn, and vanished in winter. Neither heredity nor syphilis played an important *rôle* in the pathogeny of the disease. On the other hand, there was a relationship between "scrofula" and spring catarrh, as

shown by the existence of general adenopathy, hypertrophic rhinitis, adenoids, enlarged tonsils, and a lymphatic *facies* in those who suffered from the latter affection. Most of the patients were of an emotional temperament. Contagion was unknown. A sleepy look, due to drooping of the upper lids, was generally a striking feature of the cases. A brownish colouration surrounding the cornea was often pronounced. As regards the distribution of the conjunctival lesions, the changes usually occurred on the tarsal conjunctiva of the upper eyelid. In two of the 93 cases only was the lower tarsal conjunctiva involved, although in other instances it participated in the general hyperæmia, but without showing vegetations or papillæ. Of the 93 cases, the disease was localised to the conjunctiva of the upper lid in 33, and to the limbus in 15, while in the remainder, 45 in number, both tarsal conjunctiva and limbus were affected. The author has seen cicatrices in several cases follow the resorption of the palpebral growths. Pascheff has found excision to be the best way of dealing with large tarsal or limbal vegetations. Twenty cases of spring catarrh were examined pathologically, and the details of nine cases are given by Pascheff at considerable length. But for details the original communication should be consulted. SYDNEY STEPHENSON.

(3) The fact that certain skin diseases are caused by exposure to sunlight, and the simultaneous occurrence of such skin affections with spring catarrh, as observed by Kreibich, have led this author to conclude that spring catarrh is due to the agency of sunlight. The first to act on that theory was Dimmer, who treated a case of spring catarrh by exclusion of light and thereby obtained a good result. In the present paper **Schieck** upholds Kreibich's hypothesis. He, too, saw two cases where the eye was kept covered by a bandage improve considerably. The wearing of dark glasses, however, had not the same effect, because, as Schieck thinks, light is thereby not sufficiently excluded. When Schieck says that the light theory accounts satisfactorily for the upper lids being, as a rule, more affected than the lower, it is difficult to agree with him. For the upper lids are, at times, partly hidden underneath the orbital arches. They are, therefore, if anything, more protected from light than the lower. In the anatomical part of his paper, Schieck confirms mainly the results of his original investigations (*vide* abstracts of papers dealing with the same subject in THE OPHTHALMOSCOPE, 1907, p. 219). He emphasises again the essential part played by the elastic elements of the episcleral and tarsal tissue. On the other hand, he has changed his opinion as to the nature of the cells which fill the interstices between the outgrowing fibrous strands, and agrees with Thaler, who pronounced them to be „mast" cells and lymphocytes. C. MARKUS.

(4) A husbandman, aged 32 years, had suffered from periodic conjunctivitis since he was three years of age. When examined by **Antonelli**, the milky condition of the tarsal conjunctiva was typical of spring catarrh, and there were, besides, several small tufted vegetations towards the free border of the eyelid. The limbal manifestations of spring catarrh, as shown by the figure, were immense. As regards the left eye, they attained the dimensions of a small raspberry, occupying the upper-inner quadrant of the cornea. Associated opacities of the cornea accounted for the fact that the sight was reduced to about 0·3.



Some years before Antonelli saw the case, an operation had been performed on the left cornea for the removal of vegetations from the lower-outer quadrant. Antonelli excised the mass from the left cornea and applied the galvano-cautery to the raw surface resulting from the operation. The patient, who lived in Auvergne, far from Paris, was not seen again, although it was known that relapses occurred and that his sight failed still further.

The excised mass was fixed in formol, hardened in alcohol, cut in series, and the sections were stained in various ways. There were no striking changes in the epithelial layer, except in certain places where it was more or less thickened. Karyokinetic figures were relatively uncommon, while foci of mucous degeneration were common enough. The stroma, which in many parts was almost alveolar, was moderately infiltrated with small round cells, which here and there formed grouped masses. The stroma included numerous vessels of various sizes. Cystic cavities were of three kinds:—1. Those resulting from the mucous transformation of the epithelial elements, either of the

superficies or included in the fibrous stroma of the mucous membrane. 2. Lymphatic cysts, the walls of which were composed of a fine fibrillary layer and a single layer of endothelial cells. 3. Cavities which lay isolated in the fibrous stroma of the deeper layers, with their walls made up of a basal membrane, together with three or four layers of epithelial cells—cylindrical, cubical, and the innermost ones flattened and more or less detached or shed. Elastic fibres were abundant in the stroma around these cystic dilatations. Antonelli has been unable to find any description of the last-named cysts (3), and he has come to the conclusion that they represent a simple cystic degeneration of the glands of Manz. These glands have been described by Manz in animals, and in man by Stromeyer, Henle, and Ciaccio, although the accuracy of the latter observations has been contested by Waldeyer and by Terson. These contradictory results prove that the utricles of Manz, constant in some animals, may be absent from or, at least, rare or rudimentary in man. This variability accounts for the different aspect of the limbal proliferations and the rarity of cystic formations.

The rest of Antonelli's communication contains some anatomico-pathological notes inspired by Axenfeld's address in opening the discussion on Spring Catarrh at the French Ophthalmological Society in May last (*see* THE OPHTHALMOSCOPE, July 1st, 1907, p. 401). Antonelli believes that the limbal forms are commoner than the palpebral forms of spring catarrh, although the former in their early stages are liable to be overlooked or mistaken for something else, especially perhaps hay fever. Axenfeld, the author thinks, is somewhat too optimistic as regards the prognosis of spring catarrh.

SYDNEY STEPHENSON.

XII.—TREATMENT.

(1) Pedrazzoli.—**The treatment of trachoma by means of tachiol.** (La cura del tracoma e il tachiolo.) *Rivista Italiana di Ottalmologia*, March-May, 1907.

(2) Cuénod (Tunis).—**On the treatment of trachoma.** (Sur le traitement du trachome.) *La Clinique ophtalmologique*, 25 mai, 1907.

(3) Abadie.—**Clinical and therapeutical considerations on buphthalmia.** (Considérations cliniques et thérapeutiques sur la buphthalmie.) *Ann. d'oculistique*, T. CXXXVII., p. 430, juin, 1907.

(4) Terson, père.—On the etiology and treatment of filamentary keratitis. (Sur l'étiologie et le traitement de la kératite à filaments.) *Ann. d'oculistique*, T. CXXXVII, p. 436, juin, 1907.

(5) Bourgeois.—The action of mercurial preparations in non-syphilitic affections of the eye. (De l'action des préparations mercurielles dans les affections non syphilitiques de l'œil.) *Recueil d'ophtalmologie*, juillet, 1907.

(6) Golesceano.—Toxic neuritis due to carbon bisulphide: therapeutic review of saline injections in toxic amblyopia (alcohol, tobacco). [Névrite toxique due au sulphure de carbone. (Diagnostic rétrospectif) Rappel thérapeutique des injections salines dans les amblyopes toxiques (alcool, tabac).] *Recueil d'ophtalmologie*, août, 1907.

(7) Davids, H.— Kalt's large irrigations in the treatment of blennorrhœa in adults. (Die grossen Ausspülungen nach Kalt bei der Behandlung der Blennorrhœa Adultarum.) *Klin. Monatsbl. f. Augenheilkunde*, August-September, 1907.

(8) Hertel, E.—On experiments with local light treatment in ulcus serpens corneæ. (Ueber Versuche mit lokaler Lichttherapie beim Ulcus Serpens Corneæ.) *Klin. Monatsbl. f. Augenheilkunde*, August-September, 1907.

(9) Wray, Charles.—A case of sympathetic ophthalmitis treated by recognised methods, and afterwards for two relapses by acetozone-hydro-therapeusis with good result. *Transactions Ophthalmological Society U.K.*, 1907.

(1) **Pedrazzoli** has recently used tachiol (fluoride of silver) in the treatment of trachoma with such success that, even after a short trial, he finds himself impelled to communicate his experience to ophthalmologists, in the hope that a more extended use will verify his first results. He uses a solution of 1 per cent. applied by a spray. HAROLD GRIMSDALE.

(2) **Cuénod** claims to have greatly hastened the cure of trachoma by using subconjunctival injections of 1 to 500 solution of cyanide of mercury, in conjunction with the method of deep scarification and curetting. The author has treated 2,000 cases in this way. Corneal lesions, in particular, are affected beneficially. While relapses are not entirely done away with, they are much rarer than with other treatment. ERNEST THOMSON.

(3) **Abadie** considers that in buphthalmia the increased tension is secondary to chorio-retinitis which is usually situated very

peripherally, and is therefore liable to be overlooked. He states that even after all the usual medical and surgical measures have failed, the tension can be lowered and the increased size of the eye diminished by prolonged treatment of the primary affection with mercury, preferably by intra-muscular injection. He quotes cases in support of his view. R. J. COULTER.

(4) **Terson**, senior, records two cases which lead him to believe that prolonged occlusion may cause filamentary keratitis in an eye with old-standing cataract, and that the direct application of a 1 in 2,000 solution of sublimate to the affected parts of the cornea may have a very beneficial effect in that disease. As additional treatment, if necessary, he suggests repeated subconjunctival injections of sterilised air. R. J. COULTER.

(5) **Bourgeois** records two cases of sympathetic ophthalmia and two cases of optic neuritis (non-syphilitic) which were successfully treated by means of mercurial applications in the form of periosteal inunctions, Gilbert's syrup, and intra-muscular injections of biniodide. The duration of treatment was very variable, but generally prolonged. One case of sympathetic ophthalmia and one of optic neuritis occupied about eighteen months, the other case of sympathetic disease took five months, and the optic neuritis eighteen days, before the eyes were functionally restored. Schmidt-Rimpler recommends mercurial treatment in the following non-syphilitic affections :—severe iritis, iridocyclitis with effusion into the vitreous, choroiditis, detachment of the retina with choroidal lesions, optic neuritis, and tobacco or alcoholic amblyopia. J. JAMESON EVANS.

(6) **Golesceano** records three cases of poisoning by carbon bisulphide in workers in a rubber factory. In one of the three there were sensory symptoms, which preceded by some months the development of ocular symptoms, which appeared within 14 to 18 months of working in the vulcanising department. The sensory symptoms were headache, numbness, and even anæsthesia of certain parts of the body, insomnia, sensation of suffocation, of dryness in the nose and throat, and loss of knee-jerks. In a second case there were headaches, and anæsthesia limited to the dorsum of the nose. In a case recorded by Litten there was also paralysis of the muscles of the legs, back, and eyes. The eye symptoms included divergent strabismus (in two cases), some dilatation with diminished or lost reactions of the pupils, pallor, with slight marginal haze, of the discs, contraction of the retinal blood-vessels, marked deterioration of vision, and central scotoma for colours.

These cases were apparently not treated by the author, but he gives his experience of subcutaneous injections of saline solutions in intractable cases of toxic amblyopia due to tobacco

and alcohol. Three cases which had resisted treatment by potassium iodide and nux vomica, improved considerably under subcutaneous injections of 20 c.c. of saline solution (serum of Chéron) about three times a week for two or three months. Golesceano strongly advocates the treatment, but the results do not appear to us very striking—the best being V. $\frac{3}{5}$ after three months' treatment—and the patients do not seem to have appreciated the treatment, as two out three abandoned it before they had recovered satisfactory vision. J. JAMESON EVANS.

(7) On the Continent Kalt's *grandes irrigations* are a favourite form of treatment for conjunctival blennorrhœa in adults. **Davids'** experiences in 12 cases, in three of which the affection was bilateral, are in accordance with the high esteem in which that method is elsewhere held. Kalt advised irrigation of the conjunctival sac from a height of 30 cm., with two litres of a tepid solution of potassium permanganate, 1:5,000 or 1:3,000. During the first days these irrigations are performed three times, after that twice daily Kalt's original method has been modified by others. Thus, Leber recommended a solution of permanganate in $\frac{2}{4}$ per cent., sodium chloride and of a strength of 1 in 10,000. Davids' solution was even weaker, 1 in 15,000. The irrigations caused no pain, the purulent discharge decreased considerably after one to three days and ceased completely after one to two weeks. The fear expressed *a priori*, that the corneal epithelium might be injured, was not verified. On the contrary, corneal complications took a favourable course, so that not a single eye was lost completely, a result not to be achieved by the older methods. C. MARKUS.

(8) In his introductory remarks **Hertel** discusses the physiological properties of ultra-violet rays. They are of a double nature, and consist, first, in a bactericidal action, and, secondly, in certain alterations of the tissues. He questions whether the latter are to be looked upon as undesirable under all circumstances. There are so-called "indirect" effects which occur in the adjoining tissues which appear to be rather of a beneficial kind. Thus, if the cornea is exposed to the rays, the following indirect reactions are observed: conjunctival and ciliary injection, œdema and cellular infiltration of the conjunctiva, an increase in the bactericidal action of the aqueous humor. In his endeavor to find a source of light suitable for the treatment of eye diseases Hertel tried first the magnesium spark, but gave it up for a cadmium-zinc lamp, which, although less rich in rays, possesses the advantage of compactness and easy regulation. He tested its efficacy in a series of 47 cases of ulcus serpens. Of these the exclusive light treatment effected a cure in 25, with vision more than 1/10 in 21 cases. In 13 cases even

the combined action of light and surgical means failed to check the progress of the ulcer. Hertel advises that the cornea be exposed to the rays for 15 minutes, three times daily. The direct reaction consists in a transitory exaggeration of the corneal infiltration, the hypopyon, and the inflammatory symptoms generally. No ill-effects on lens and retina were observed. The good final vision in so many cases is due to the faintness of the resulting scar, and should encourage further trials with Hertel's lamp. C. MARKUS.

(9) **Wray** relates a case of a man, aged 31, who, after the successful removal of a foreign body from his right eye, developed sympathetic ophthalmitis in the following month. He was treated by atropin locally and by mercury internally, and the sympathiser got well, V. = $\frac{6}{6}$. A little more than two years later Wray (who had not previously seen the patient) found that he had a relapse. He was put on atropin locally and the "acetozone-hydro-therapeutic" treatment. In less than a month the vision had improved from $\frac{6}{12}$ to $\frac{6}{7}$, and the posterior corneal deposits had disappeared. About a year later there was another relapse (V. = $\frac{6}{12}$), which was treated by mercury for nearly a month without improvement. Within three days of starting the acetozone treatment vision improved to $\frac{6}{9}$, and in a week to $\frac{6}{6}$.

The acetozone (which is expensive) is given in two grain doses in capsules. *Before Breakfast.*—(1) Drink half-pint of warm water. (2) Take one capsule. (3) Walk briskly for ten minutes in the open air. (4) Drink a second half-pint of water. (5) Walk for ten minutes as before. *Repeat at* 10 *a.m.*, 3 *p.m.*, *and* 6 *p.m.* ERNEST THOMSON.

XIII.—APPLIANCES

(1) **Polignani, L.—Photoscopic apparatus for Kugel's experiment in cases of simulation of amblyopia or of monocular amaurosis. (Apparecchio fotoscopico per l'esperimento di Kugel, nella simulazione di ambliopia ed amaurosi monoculaire.)** Naples, Tocco, édit., 1903.

(2) **Sassen—A simple electric ophthalmoscope. (Een eenvoudige electrische oogspiegel.)** *Ned. Tijdschrift v. Geneeskunde*, 1905, I, p. 177.

(3) **Coulomb.—On the protection of the eyes from X-rays. (De la protection des yeux contre les rayons-X.)** *L'Ophtalmologie Provinciale*, III, 23 août, 1906.

(4) Wolff, Hugo.—A second contribution on the photography of the direct inverted image of the fundus. (Neue Mitteilung ueber die Photographie des direkten umgekehrten Augengrundbildes.) *Die Ophth. Klinik*, 4 August, 1906.

(5) Pigeon.—A study on stereoscopy. (Étude sur la stéréoscopie.) *Ann. d'oculistique*, T. CXXXVI, p. 160, septembre, 1906.

(6) Tscherning, Professor.—Orthoscopic Spectacles. *Transactions Ophthalmological Society U.K.*, 1906.

(7) Lürman.—Electric glow lamps for use with the ophthalmoscope. (Elektrische Glühbrennen zum Augenspiegeln.) *Wochenschrift für Therapie und Hygiene des Auges*, 21 Februar, 1907.

(8) Aubaret.—Plan of a new model of campimeter. (Plan zu einem neuen Kampimeter Modell.) *Wochenschrift für Therapie und Hygiene des Auges*, 14 und 21 März, 1907.

(9) Krusius, F. F.—An ocular pupillometer. *Archiv für Augenheilkunde*, April, 1907.

(10) Humburger, C.—Orthocentric pince-nez. (Die orthozentrischen Kneifer.) *Wochenschrift für Therapie und Hygiene des Auges*, 23 Mai, 1907.

(11) Oppenheimer, E. H.—The orthocentric pince-nez. (Die orthozentrischen Kneifer.) *Wochenschrift für Therapie und Hygiene des Auges*, 13 Juni, 1907.

(12) Middleton, John Izard.—A signal lantern for testing colour blindness. *Journal American Medical Association*, July 6th, 1907.

(13) Tenney, John A.—The relation of the circumlental space to the causation of glaucoma as shown by the Würdemann lamp. *Journal American Medical Association*, July 27th, 1907.

(14) Mortimer, Frank.—A parabolic reflector for the illumination of test-types. *Journal American Medical Association*, August 3, 1907.

(15) Koster, W.—A Photo-and Chromoptometer. (Ein Licht und Farbensinnmesser.) von Graefe's *Archiv f. Ophthalmologie*. Bd. 66, 3, September 17, 1907.

(1) **Polignani** makes use of a little cubical box, having a hole of 3 mm. diameter, provided with a white or coloured ground-glass disc on four of its surfaces, and containing a 10 or 20 candle-power electric lamp. The patient is placed at a dis-

tance of 5 metres, and furnished with cylindrical glasses fixed in crossed directions for the two eyes, and he is asked to tell the colour and disposition of the lines of diffusion.

A. ANTONELLI.

(2) A small, simplified electric ophthalmoscope of Wolff, to be attached to a miniature accumulator, which can be carried in the pocket. G. F. ROCHAT.

(3) **Coulomb** finds that the shells of Paris enamel (*émail de Paris*) made in Germany, recommended by Van Duyse and de Nobele for the protection of the eyes from the action of X-rays used in the treatment of diseases of the conjunctiva or lids, are not really impervious to the rays. He has obtained better, but not quite satisfactory, results with crystal (*cristal*) rich in lead with German silver (*mailiechort*) and with Paris enamel, made in France, but recommends lead shells at least 2 mm. thick, which he finds to remain opaque to an exposure of ten minutes at a distance of 10 centimetres. For the protection of the operators' eyes, he suggests spectacles made of very dense flint glass (15.004) 2 mm. thick. These are expensive, heavy and yellowish, but are opaque to a ten minutes' exposure at 10 centimetres.

R. J. COULTER.

(4) Since his experiments recorded in 1903, **Wolff** has made further attempts to photograph the fundus of the human eye. The source of his illumination is an electric lamp of 50 c.p. and 110 volts. Light of sufficient intensity is obtained by increasing the voltage for the time to 220. The apparatus, which is still in an experimental state, consists mainly of a Zeiss projection apparatus, an electric ophthalmoscope, and a camera. The results so far are encouraging, although the photographs obtained up to now are wanting in detail. PERCIVAL J. HAY.

(5) **Pigeon** gives a description of various forms of stereoscopes and of the principles of their action. For practical purposes, *e.g.* in the treatment of strabismus, he recommends one in which the pictures are placed at an angle of about 140° to each other, one of them being seen directly, and the other in a mirror bisecting the angle between the pictures. R. J. COULTER.

(6) **Tscherning** (through Lindsay Johnson) makes a communication to the Society in which, after condemning biconvex and biconcave lenses (the former more particularly) on account of their well-known defects of aberration and restriction of the field, he proposes certain special lenses of his own calculation in which the defects are greatly reduced and recommends them for use both in trial-cases and in practice. He does not recommend them for trial-case work where there is to be a cylindrical correction. For this he prefers plano-convex and concave lenses. In the discussion which followed several

members pointed out that Percival's name should have been mentioned in connection with periscopic lenses, and Parsons stated that Percival's formulæ were the best extant. Lindsay Johnson admitted that Percival had to some extent anticipated Tscherning, but pointed out that the latter was the first to demonstrate how, by making the curve nearest the eye concentric with the cornea, the amount of astigmatism and distortion for oblique rays could be almost entirely overcome, since the entering rays more nearly approached the character of chief rays. ERNEST THOMSON.

(7) **Lürman**, dissatisfied with the unevenly distributed light from the ordinary lamp, has succeeded, after much trouble, in getting flawless opal glass lamps made by Meyer, of Bremen. These lamps satisfy the requirements of the ophthalmologist, but are expensive, in consequence of difficulty in manufacture. They cost 3/6 each. ERNEST THOMSON.

(9) **Krusius** has designed a pupillometer intended chiefly for studying the consensual reflex. It consists of a light box which is tied to the patient's head, so as to be in front of one eye. The box has three apertures, one for the patient's eye, one through which light from an electric lamp is admitted, and one through which the observer can note the movements of the pupil as reflected upon a mirror with a scale. The instrument is not so much a clinical instrument as a physiological one.

P. J. HAY.

(13) **Tenney** has examined the eye of 200 persons of all ages to see to what extent the lens encroached on the ciliary processes as age advanced. He applied the Würdemann lamp to the margins of the lids at the outer canthus and looked obliquely through the pupil. He says that, "when one eye is affected with glaucoma, the other may be examined by using alypin for a local anesthetic, as it does not increase the tension of the eye, but rather decreases it. If the observer looks forward far enough into the normal eye, he sees the ciliary body as a dark ring." He has "noticed many cases in which the anterior chamber was very shallow, and the circumlental space also, yet there was no increase of tension. He has noticed also that the members of a family in which glaucoma has appeared all have a narrow circumlental space. He has not seen a case of narrow cornea in cases of glaucoma. Hypermetropia is common, but some cases are emmetropic. He tells us that "it would seem that chronic glaucoma must be caused by excessive pressure in the vitreous chamber, caused by diseased blood vessels in the uveal tract: at the same time there is probable alteration in the constitution of the aqueous humor, which blocks up the outlets." He states that this alteration in the fluids produces glaucoma after

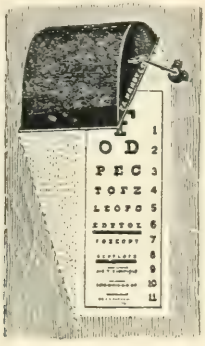
traumatism, and in serous cyclitis ; and reminds us that Uribe Troncoso claims to have found an excess of albumin in eyes affected by chronic glaucoma. Finally, he asks, " why may not the ciliary process secrete albumin when age has changed the character of the blood vessels ? " C. A. O.

(14) **Mortimer** believes that " under present-day considerations it is imperative that artificial illumination be used for the lighting of test-types. The quality of the light produced, its location and distribution with reference to its proper reflection, he says, are matters which have to be observed in order to obtain an even and constant illumination over the whole surface of the card. The ideal condition, that of daylight, which we should endeavour to imitate, is one of nearly perfect diffusion. An even illumination over the whole surface of the test-type card, approximating day-light, can only be obtained with artificial lighting by means of a proper reflecting surface. The most common fault with the lighting of test-types is the improper care in the selection of the reflector and the position of the lamps. The reflector has been installed and selected in a haphazard way, and the resulting illumination left to be what it may. As a consequence, with installations of this kind there are spots and streaks of light on the surface of the card, plainly indicating the location of the lamps, and the obvious difference of intensity on the portions of the card farthest removed from the light source. Believing that some attempt ought to be made to design a reflector based on exact scientific principles, so as to give uniform illumination under a simple law, the following problem was undertaken. The principle involved is the reflection from a paraboloid of revolution, *viz.*, a beam of parallel rays falling on a paraboloid or light emanating from the focus of the paraboloid is reflected by the paraboloid as a beam of parallel rays." He reminds us that " it is to be remembered that only when the luminous object at the focus is a point with rays diverging from it be reflected in a parallel beam. The nearest approach to parallelism occurs with the incandescent light, in which case the illuminated surface is very small."

" As a basis for calculation one must first determine the point of a plane surface where the illumination is a maximum from the law, that the illumination of a plane surface by a luminous point varies directly as the cosine of the angle of incidence of the rays and inversely as the square of the distance of the luminous point from the surface." . . . (By experimenting he found that the best distance from the focus to the vortex, was 4 inches, or 1/3 ft.)

" Having determined on the kind of reflector (parabolic), and the illuminant (incandescent electricity), the next step in the

problem is to find the distribution curve, in order properly to place the reflector so as to secure uniform illumination on the test-card."



The characteristic of the common parabolic reflector known as the " D'Olier No. 35," " as well as of many other concentrating reflectors, is that the maximum candle-power is obtained directly underneath the lamp when the lower edge of the reflector is placed in a horizontal position. The candle-power rapidly falling off as the angle from the vertical increases. This fact (he tells us) is of very great value in enabling us to place reflectors so as to illuminate test-cards and pictures evenly."

The proper position of the source of the light with reference to the card can be determined by trial in any given case in a few seconds' time.* C. A. O.

(15) **Koster's** instrument (manufactured by H. Brounier, at Leyden) represents a very considerable improvement on Foerster's photometer. It is much more comfortable for the patient, as it has an incision for the nose at the floor of the box, which allows of free breathing, while the sidelight is excluded by sideboards. The lantern (candle) is straight in front of the patient between his eyes, and, of course, completely screened off, which makes the instrument much less cumbersome. Two handles serve two flaps to shut out one eye if required. The real source of light is a triangular gap in front of the lamp which can be regulated by the raising and lowering of an oiled-paper screen. The normal eye recognises the test object if the height of the triangle is one millimetre, and as the greatest possible height is fifty, this allows the measurement of a light perception which is diminished to $\frac{1}{2500}$ of the normal. The test object is a simple broad white ribbon which rotates with a disc on the posterior surface of

* The parabolic reflector can be obtained in this country from Messrs. F. A. Hardy and Co., 12 and 13, Henrietta Street, Covent Garden, London, W.C.

the box, so that the statements of the patients can be checked, while the simultaneous perception of any shaped object is avoided. To measure the chromatic sense of the patient the instrument also contains four sheets of coloured paper (red, green, yellow, and blue: Hering's pigments) each eight centimetres square and framed in a white paper border of one centimetre breadth—the latter because it allows the patient to recognise the white border first, before he can notice the coloured square. The four sheets are turned down by four handles, one at a time, and the minimum aperture required to recognise each in turn is noted. The white ribbon also holds four small coloured discs of 5 mm. diameter, which can just be recognised in the same light as the large colour-sheets, so as to measure the foveal colour perception, and a row of small test letters drawn for a distance of $\frac{1}{3}$ metre to measure the minimum of light required to attain the full possible vision. But to use this last test a strong electric lamp of 32 candle-power must be inserted instead of the candle, and even then, the results must be each time compared with the normal eye. This photochromotoptometer, of course, does not really measure the light and colour sense but only the minimum of perception, but this is quite sufficient for most clinical purposes. It is especially important—for instance in case of unilateral retinal detachment—to ascertain whether the other eye is not suffering from chronic choroiditis in spite of normal ophthalmoscopic appearance, when the foveal colour perception as tested with Wolfberg's minute colour discs may be perfectly normal, also in case of glaucoma and optic atrophy, especially with regard to prognosis.

R. GRUBER.

REVIEWS.

Recherche et Diagnostic de l'Hérédo-Syphilis Tardive. Late Hereditary Syphilis. By Dr. EDMOND FOURNIER, Paris: Masson et Cie., 120, Boulevard Saint-Germain, 1907.

Hereditary syphilis enters into the causation of so many affections of the eye that ophthalmic surgeons must perforce be familiar with the stigmata characteristic of that condition. They will find in **Fournier's** monograph on the diagnosis of late hereditary syphilis much information difficult to obtain elsewhere, together with some of the most life-like pictures of the various lesions that we ever remember to have seen. One illustration, showing a syphilitic infant, is reproduced here, simply that readers may judge for themselves how excellent they are.

Fournier treats his subject from the widest possible standpoint, He commences with the family history, and explains lucidly how this bears upon the recognition of the disease. It may be noted in passing that Fournier expresses a strong opinion that *la syphilis fait des jumeaux*, although he attempts no explanation

of this seemingly paradoxical fact, assuming it to be such. As regards the patient himself, Fournier groups the possible specific stigmata as follows :— general physiognomy ; Hutchinson's triad ; lesions of the skin and mucous membrane ; testicular stigmata ; stigmata affecting the locomotory system and nervous system ; morbid states and predispositions of syphilitic subjects ; and,

lastly, dystrophies, malformations, and monstrosities. Then follow sections on the diagnostic interpretation of the stigmata discovered by the surgeon, and on the therapeutical deductions that may be drawn from them. The book ends with a series of carefully reported cases bearing upon various points brought out in the preceding pages.

The section devoted to a discussion of the ocular stigmata of hereditary syphilis is illustrated by a plate containing six coloured pictures of the fundus oculi. The eye symptoms are among the most important and diagnostic signs of syphilis. Well might the patient who was supposed to be suffering from a cancerous growth of the pelvis, but who recovered under specific treatment after a brother was found to show ophthalmoscopic evidences of syphilis, exclaim : "*J'ai été sauvé par les yeux de mon frère.*"

Among the characteristics that should lead one to suppose that a past eye affection was of syphilitic nature, Fournier enumerates several points, of which the most important are the long duration of the disease, the temporary blindness entailed by it, the absence or slightness of pain, and the fact that both eyes were involved at an interval of several weeks. Like Fournier *père*, the first to note the association, Fournier *fils* lays stress upon the frequent co-existence of squint and syphilis. The former observer noted squint 19 times among 50 cases of hereditary syphilis, and concluded that the one condition might be, and probably was, a consequence of the other. A retrospective diagnosis of interstitial keratitis, according to Fournier, may be based upon the characters of the residual corneal opacities, inasmuch as these are deep and not superficial, are not associated with any flattening of the surface of the cornea, and are combined with the persistence, at all events for many years, of fine, deep vessels in the affected cornea. To these points may be added the bilaterality of the lesions, together with their central position.

The specific stigmata of the fundus oculi are still little known to the medical profession at large, since to use the ophthalmoscope in a workman-like way implies a special training. The fundus changes may be either gross or rudimentary. The first-named include the atrophic patches or pigmentary deposits of choroido-retinitis, familiar to every ophthalmic surgeon. More interest centres around the attenuated or rudimentary stigmata of hereditary syphilis, which are, besides, much commoner than the others, and on that account of greater diagnostic value. These rudimentary signs may be classified in the following way :—(1) a slaty hue of the fundus oculi, generally occupying the circumpapillary region ; (2) an appearance as if

the fundus had been sprinkled with grains of black powder, particularly towards the equatorial region; (3) an irregular black line, *le cadre pigmentaire de la papille* of Antonelli, encircling more or less of the circumference of the optic disc; and (4) an equatorial collection of pigment spots, resembling those which are characteristic of retinitis pigmentosa. Indeed, according to Fournier, evidences are accumulating to show that pigmentary retinitis is in reality a manifestation of hereditary syphilis. For example, the disease is remarkably frequent in families characterised by a high infantile mortality. Again, it is common in association with dystrophies recognised as part of the usual *cortège* of hereditary syphilis, such as strabismus, retinitis, congenital cataract, deafness, mutism, idiocy, and vices of development.

The rudimentary stigmata, as enumerated above, Fournier believes to be caused in the majority of cases by syphilis. Their diagnostic importance is therefore considerable, and when found they justify a strong presumption in favour of the existence of a syphilitic taint. Their bearing on transmission to the third generation is dwelt upon by the author.

Other ophthalmoscopic appearances suggestive of inherited syphilis are—narrow retinal vessels, more or less hidden by white lines (perivasculitis), incomplete optic atrophy, and diffuse depigmentation of the choroid, especially in the equatorial region of the fundus. These various signs, it need scarcely be pointed out, may occur alone or together in one and the same subject.

Among the functional disturbances found in hereditary syphilis, Fournier enumerates congenital amblyopia, hemeralopia, nystagmus, strabismus, and myopia. The connection between myopia, on the one hand, and syphilis, on the other, was first pointed out by Antonelli (*Thèse de Paris*, 1897), and has since been adopted by de Lapersonne (*Presse Médicale*, December 28, 1905), who advises that a general examination of the patient, especially for inherited syphilis, should be made in every case of myopia.

In conclusion, Fournier mentions the malformations of the eye which appear to be commoner in syphilitic subjects than in others.

SYDNEY STEPHENSON.

Mein Heilserum. My Therapeutic Serum. By PROFESSOR Dr. R. DEUTSCHMANN. *Beiträge für Augenheilkunde*, Heft 69, August, 1907.

In this contribution Professor Deutschmann, of Hamburg, gives an account of a polyvalent serum obtained from rabbits which have been fed upon yeast.

While repudiating the suggestion that he has discovered a universal remedy, Deutschmann claims that his serum has an inhibitory action upon infective processes and acts beneficially upon the organism in general. He has found that his serum cuts short attacks of acute pneumonia and tonsilitis; and has proved valuable in pleurisy of tuberculous origin, in puerperal septicæmia, in otorrhœa, and in many skin diseases. He has successfully used it for gonococcal infection of the eye, for episcleritis, corneal ulcers, interstitial keratitis, serous iritis, retinochoroiditis, post operative infection, sympathetic cyclitis, and, lastly, in optic neuritis following mumps.

If it were possible to accept all Professor Deutschmann's conclusions, the therapeutics of the future would be much simplified. Unfortunately, a critical examination of Deutschmann's own cases does not convince us that the results are as favourable as they appear to him. He has placed on record no experiments in which normal rabbits' serum was used. There is, therefore, no means of proving that the beneficial effect observed was caused by the influence of the yeast upon the serum. After a short summary of previous experiments with yeast made by Macfayden, Sanfelice, and others, Deutschmann points out that he approached the subject from an entirely new standpoint.

Common yeast had proved useful in the treatment of boils, various eruptions, indigestion, and continued suppuration. There were many preparations upon the market, but they all had the disadvantage that they caused diarrhœa and flatulence. Experiments upon animals had shown the danger of large doses, the futility of small ones. Deutschmann concluded that if yeast contained a curative principle, it ought to act better by subcutaneous injection than by the mouth. But injections of ordinary beer yeast often caused severe local disturbance. It was found impossible to inject sufficient yeast into a rabbit either to exert a therapeutic action or to excite the formation of antibodies in the serum. He therefore fed rabbits for eight days upon dried sterilised yeast, and on the eighth day he obtained his serum in the usual manner. Some rabbits tolerated the diet badly, suffered from diarrhœa, loss of flesh, and died. The serum obtained had the following somewhat negative qualities: — it was not bactericidal; it did not agglutinate yeast cells, staphylococci, streptococci, pneumococci, or the tubercle bacillus; it had no action upon the opsonic index. In this connection it should be remarked that Huggard and Morland showed that yeast altered the tuberculo-opsonic index and caused a leucocytosis (*Lancet*, June 3rd, 1905, p. 1493.) Deutschmann states that the serum has no specific action; it is polyvalent. It is produced differently from all other sera: the

animals are fed with yeast, not injected with it. This diet causes no leucocytosis. The serum does not neutralise diphtheria toxin, and Deutschmann thinks it has no anti-toxic action. He suggests that it stimulates and nourishes those cells in the infected animal which produce antibodies. Professor Deutschmann does not state in what respects his serum differs from the serum of a normal rabbit. Its qualities are apparently entirely negative!

Deutschmann inoculated the anterior chamber of rabbits with septic material-cultures of staphylococci, pneumococci, etc., by introducing it between two small platelets of gelatine; at the same time the animals were fed with yeast. The resulting inflammation was much less than that in control animals who received the same dose of sepsis but no yeast. If yeast feeding were commenced before inoculation, the results were even more successful. The effect was transient; if yeast were omitted from the diet the inflammation increased. The injection of serum from a yeast-fed rabbit gave far superior results to a mere yeast diet. Deutschmann does not tell us what the result would have been had the two methods been combined! The details of the experiments are insufficient for a destructive criticism of the results. It is often, even in a human eye, difficult to say that an infective process is better or worse on successive days. It must be much more so in a rabbit, and yet Deutschmann is able to detect an exacerbation of the infection if the yeast be omitted for a single day. The graduation of the dose of septic material is of necessity somewhat uncertain, and, no doubt, the reaction to a similar dose varies in different rabbits. Before Deutschmann's results are accepted as final, the experiments should be repeated and identical results obtained by an independent research. The clinical cases are very interesting and should be studied in the original. In the space at disposal we cannot attempt an exhaustive criticism, but the following case is typical of the majority:—

Herr M. had been treated for dacryocystitis, chronic conjunctivitis, and ectropion. Now has a central corneal ulcer on the left side, but no hypopyon. This ulcer was cauterised. Next day there was a nypopyon, the ulcer had increased in size, and the discharge contained pneumococci. No pus could be squeezed from the lacrymal sac, but we are not told whether the duct was patent or whether pus could be syringed out. Two c.cm. of yeast-serum were injected. Two days later the ulcer had again increased, but on the fourth day the ulcer seemed to have ceased spreading. Patient was now *taken into the hospital*, and the injections continued. After this the ulcer began to heal, and eventually "perhaps" sufficient clear cornea remained at the periphery to permit of a future iridectomy.

This result can only be considered a very bad one; the ulcer did not commence to heal till the patient was *admitted* to the hospital, although the serum had been used outside. The ulcer seems to us to have taken the usual course of a bad hypopyon-

ulcer, and we venture to suggest that had it been treated by a Saemisch's section, the result might have been better, and could not have been much worse. We remain unconvinced that the serum had any action whatever.

In nearly all the cases of hypopyon-ulcer cited the serum treatment was not exclusively adopted; the ulcers were cauterised, the eyes tied up, kept clean, and probably treated with atropine. Nor does a careful consideration give the idea that they did better than, if indeed as well as, similar ulcers do under orthodox treatment.

The cases of interstitial keratitis, choroido-retinitis, and sympathetic cyclitis seem to have behaved much as they might have been expected to do had no serum been given. The case of optic neuritis after mumps was treated for three months with yeast serum. The vision improved from V.R. - fingers at 3 feet, V.L. corrected = 17/40, to V.R.—17/30, and V.L.—17/20. Deutschmann, however, does not claim that this result would not have been attained without the serum.

Professor Deutschmann thinks that the serum treatment has proved most efficient in cases of serous iritis. In the following case serum alone was used, no atropine being instilled!

Fraulein Olga, M., age 22, come to the Polyclinic complaining of loss of vision in the right eye. Old choroiditis was found on each side, the right eye showed recent serous iritis, accompanied by copious keratitis punctata. R.V. $\frac{}{6}$ 1·5 D. = 8/12. L.V. $\frac{}{6}$ —1·5 D. = 8/8. Patient received an injection of 1·5 c. cm. twice a week. At the end of six weeks the keratitis punctata had disappeared and the vision on each side was 8/8.

Professor Deneke treated 24 cases of acute croupous pneumonia in the General Hospital at Hamburg with the serum. In fully half the cases the temperature at once fell with a critical sweat, and the patients were obviously much better. In some cases the crisis set in on the fourth day, and in one case on the second day. Here we have a crucial test of the value of the serum. Professor Deutschmann claims that it acts most energetically against pneumococci, and if he can prove that in a sufficient number of cases of pneumonia, the crisis can be accelerated from the seventh to the fourth day, the yeast serum treatment will become universal and pneumonia will have lost some of its terrors. If Professor Deneke has obtained such encouraging results with 24 cases, probably he has treated many more cases with the serum and its value will be definitely settled. But it must not be forgotten that a crisis on the fourth day is not a very rare event in pneumonia, and that in half the cases the serum seems to have had no action.

We cannot help fearing that Professor Deutschmann has interpreted his facts somewhat optimistically and that future research will lead him to modify his views.

The yeast serum produces the usual erythema and urticaria in certain cases, but otherwise has never been found to exert any unfavourable action. It can be obtained from the Serum Laboratory of Reute-Enoch, in Hamburg, in 2 c.cm. bottles, which cost 2s. 2½d. each. T. HARRISON BUTLER.

Preventable Blindness: An account of the disease known as the ophthalmia of the new-born, and of its effects; with a plea for its suppression. By N. BISHOP HARMAN, M.A., M.B., F.R.C.S. London: Baillière, Tindall, & Cox, 8, Henrietta Street, Covent Garden, 1907. Price 2s. 6d. net.

The sub-title of Mr. N. Bishop Harman's small book gives a more accurate idea of its contents than that conveyed by *Preventable Blindness*, although the latter will doubtless attract the more attention. It is in reality an account of ophthalmia neonatorum, and includes sections dealing with the incidence, risks, contagiousness, bacteriology, treatment, and prevention of that disorder. From a recent note in the *British Medical Journal* (October 5th, 1907, p. 914) we gather that the book has been written "for all who will read it, and particularly those interested in social matters." This makes it a little difficult to know how to class the production, whether as "fish, flesh, or good red herring," and, in fact, the work appears to us to fall between two stools, since it is somewhat too technical for the general reader and at the same time scarcely technical enough for the medical man trained in ophthalmology.

Mr. Harman's remarks on the incidence of the disease are instructive, although by no means wholly free from fallacies. The figures are drawn from three sources: 1. From a personal enquiry among certain general practitioners of medicine; 2. From some hospital statistics; and 3, From an examination of London elementary school children. We may glance at each of these items in turn. 1. From eight doctors practising in a London suburb Mr. Harman obtained returns covering 12,680 births, a number among which (nothing is said of still-births) 110, or 0·87 %, showed some purulent discharge after birth. Six eyes were damaged by ophthalmia—that is 5·4 % of those affected or 0·047 % of the total births covered by the returns. 2. The author has examined the case-papers of children who have attended the eye department of the Middlesex Hospital for the last twenty years, and he finds that, however looked at, cases of ophthalmia neonatorum have decreased during the period in question. For example, during the first four years of the period, ophthalmia neonatorum formed 1·05 % of the total eye cases, while during the last four the proportion was only 0·25 %. Again, as regards infants under one year, the disease, which once formed 39% of the cases,

now forms 23% only. 3. With regard to elementary school children, Mr. Harman found 7 eyes damaged, presumably as the result of ophthalmia neonatorum, among 40,000 scholars.

In brief, our author concludes that in London among every 100 children born, one child suffers from ophthalmia neonatorum, and that of every 2,000 children born, one is more or less blinded by the disease.

How does Mr. Harman propose to remedy this state of things? He decries obligatory prophylaxis, yet finds his panacea in obligatory notification. In other words, he would substitute one form of compulsion for another. He enumerates the advantages which he thinks would accrue from the adoption of his plan, but he is strangely silent about the disadvantages which Dr. Victor Morax has pointed out in the working of notification in France, where it has been obligatory since June, 1903. Still, the change as regards England could be readily made, as Mr. Harman points out, since under the Infectious Diseases (Notification) Act of 1889, local authorities already possess such powers *in posse*, subject only to the assent of the Local Government Board. Mr. Harman, however, recognises that matters must not begin and end with notification. Cases must be supervised and treated medically. Mr. Harman appears to think that suitable cases might be looked after by medical men "deputed by the Midwives Supervision Boards, or by a public hospital, or by the hospitals of the Metropolitan Asylums Board." He also advocates, as others (particularly Stephenson) have done before him, that cases should be taken into hospital for treatment, together with their mothers.

Were Mr. Harman's language somewhat more restrained it would, we think, carry greater weight with readers of his book. It is unnecessarily forcible in places, and here and there its elegance leaves something to be desired. What justification, for instance, can be found for sentences such as those quoted below?—"There was a right lacrymal abscess, filled with stinking pus" (p. 63). "No efficient solution ever gets to the conjunctiva: it is decomposed by the pus, and adds a myriad of minute foreign bodies to the stew" (p. 69). Speaking of the results of a neglected ophthalmia (p. 31) we are told that "the clear eye of the babe becomes for life a white, misshapen, sightless mass, an object of loathing (*sic!*) to those who see it." "Loathing" is assuredly neither the correct nor the humane word to employ here, although "pity" may be. More care should be taken to spell proper names correctly, since we find "Armargnac" for Armaignac, "Fienzal" for Fieuzal, "Stevenson" for Stephenson, "Pechin" for Péchin, "Neiden" for Nieden, "Fendic" for Fendick, and so forth. On the other hand, the text contains few printers' blunders.

Les Accidents du Travail intéressant les Organes de la Vision. 3rd Edition. By FELIX BONNAUD. Roanne: Grande Imprimerie Forézienne, P. Roustan, 1906. Price 2f. 50c.

In this *brochure* of 38 pp., the author deals with injuries of the eyes in relation to the French Law of April 9th, 1898, which is in the main very much like the British Workmen's Compensation Act, except that $\frac{2}{3}$ the annual wage is allowed for total and permanent incapacity, and that half wages are paid from the day after the accident if the incapacity lasts more than ten days, but only after the 5th day if that incapacity lasts.

Bonnaud discusses the value of an eye completely lost under varying circumstances, the partial or complete loss of one or both eyes, the difference between physiological and professional visual acuity, the value of binocular vision in different trades, the estimation of working incapacity from diminution of the visual fields, and from interference with musculature of the eyes, etc. As guides for these estimations he gives tables drawn up by Magnus, Groenouw, and others, but he is careful to explain that there is no formula applicable to all cases.

For those who may be asked "in what way, and to what extent, does the injury produce incapacity for work?" this little work will prove a very safe and valuable guide. J.J.E.

NOTES AND ECHOES.

Obituary. THE death is announced from Lublin, Russia, of Dr. J. Talko, at the age of 68 years. He was a well-known contributor to the *Centralblatt für praktische Augenheilkunde* during the earlier years of that useful periodical.

* * * *

Appointments. DR. W. H. WILDER has been appointed Professor of Ophthalmology in the Rush Medical College of Chicago in succession to Dr. F. C. Hotz, retired. Mr. A. R. F. Evershed has been appointed Ophthalmic Surgeon to the Brixton Dispensary, London.

* * * *

Campaign against Trachoma.

As regards the prophylaxis of trachoma, last year's Palermo Congress—the first of the kind held upon Italian soil—formulated the following proposals:—(1) the appointment of an ophthalmological inspector, attached to the office of the Minister of the Interior, who should seek the prevention of all eye diseases in general, and of trachoma in particular; (2) the institution of dispensaries for the treatment of eye disease at the expense of the community in localities where trachoma is rife; (3) the appointment of an oculist-inspector and the founding of sanatoria for trachoma in affected provinces or districts; and (4) an appeal to the State for assistance in providing trachoma schools, and in the dissemination of literature dealing simply and plainly with the subject of the hygiene of the eye.

* * * *

Graefe Prize.

To our eminent correspondent, Professor A. Birch-Hirschfeld, has been awarded the Graefe Prize instituted by Professor v. Welz. The works that have attained this well-merited distinction are those which deal with the action upon the eye of the ultra-violet and the X-rays. The award is signed by the names of Fuchs, Dimmer, Stölting, Uhthoff, and Wagenmann. Congratulations to Dr. Birch-Hirschfeld!

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Fencing for Ophthalmic Surgeons.

One of our number, Dr. J. Santos Fernandez, writing in the *Anales de Oftalmologia*, advocates fencing (*la esgrima*) as one of the best forms of exercise for ophthalmic surgeons. That it makes the hand tremble is dismissed as an idle fiction by our colleague. We seem to remember that when the British Medical Association met at Oxford a few years back, an exhibition of *l'escrime*, organised by the President of the Ophthalmological Section, himself a vigorous exponent of fencing, formed one of the most popular "side-shows." A similar display was given last year at Oxford for the benefit of the ophthalmic surgeons who assembled at the ancient University city during the latter end of July.

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Secret Remedies.

Another of our correspondents, Dr. Uribe Troncoso, of Mexico, has a vigorous article in the *Annales de Oftalmologia*, denouncing secret medicines, and praising the action recently

taken in the United States by the American Medical Association to discourage the use of these so-called "remedies," most of which depend for their sale on the credulity of the public and the greed of newspaper proprietors in publishing their advertisements. At the request of the Association, the composition of the better class of patent medicine has been made public by the owners. The information, however, was often refused. The Association accordingly analysed the compounds, with results that might be amusing if the subject were not so serious. One quack remedy, "Perana," largely puffed as a cure for catarrh of the mucous membranes, proved to be American whisky of the worst class. Troncoso calls on his Mexican colleagues to copy the action of the American—and it might be said also of the British—Medical Association.

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A Paper for the Blind.

MRS. WILLIAM ZIEGLER has furnished funds to be used in publishing a magazine for the sightless. This will be the first of its kind in America, and the second in the world. It will contain news, items, stories, and special articles of interest to the blind, and will circulate in institutions as well as before the public.—*New York State Journal of Medicine*, October, 1907.

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Good News for the Ophthalmic Hospitals.

OPHTHALMIC surgeons attached to the Metropolitan Hospitals will learn with mixed feelings that Dr. James Kerr, Medical Officer to the Education Committee of the London County Council, in his recently issued Annual Report, announces that as the result of the sight-testing in the elementary schools in 1906, nearly 30,000 children have been recommended to obtain advice on account of bad sight. In the following words the medical officer appears to hint at some scheme of municipal treatment for the children.—"To cope with this great work as a public service the Council would require half a dozen school clinics open daily for at least half the day. . . . . Each centre by hard work could manage about 150 new cases weekly, and thus just meet the demand." By the way, Dr. Kerr on this occasion spares us any comments upon the way the refraction work is carried out by the hospitals upon which with the present want of system the onerous and uninteresting work is cast.

* * * *

The Iniquities of the "Sight-Tester" in Scotland.

Dr. A. Rudolf Galloway, Ophthalmic Surgeon to the Aberdeen Eye Institution, had some unkind things to say of the "Optologist" (save the mark!) in the spirited presidental address delivered by him on November 7th last before the Aberdeen Medico-Chirurgical Society. "It must be common knowledge to all," said Dr. Galloway, "that "even in our own city one cannot walk far without seeing "exhibited in the window of a jeweller, chemist, photographic "dealer, or even a toy shop, a notice that eyesight is tested "free, and that all kinds of errors of vision are accurately cor- "rected. Sight-testing diplomas issued by the Spectacle Makers' "Company, and other bodies, are also exhibited to draw the "public to their fate. Of recent years I have had large experi- "ence of cases treated by these quack diplomates, and I may "say that the only ones I have found to have even the "semblance of proper correction, were a few with presbyopia and "in these cases the patients had probably been their own advisers. "Of the mistakes made by them some may be only distressing to "the patient, while others, unfortunately, are much more serious. "As an instance of the former class, I may mention the almost "universal tendency to supply a cylindrical lens when there is "no astigmatism, also to correct an amblyopic eye or one with "corneal nebula, or other opacity of media, by a much stronger "lens than its fellow. Of the more serious class I can "recollect many cases of spasm of accommodation corrected by "the wrong kind of glasses altogether, many cases of high myopia "greatly over-corrected with increase of error, and several of "these where all power of reading has been lost from "changes at the macula accompanying the increasing myopia. "I have notes also of cases of toxic amblyopia, of choroiditis, of "iritis, which have been treated by glasses, and in which valuable "time for treatment has been lost, with permanent damage to "the eye. At present a patient is attending the Eye Institution "with extensive disseminated choroiditis in each eye and normal "refraction, the right eye having vision of only $\frac{4}{60}$, incapable of "improvement, the left with recent failure from degenerative "macular changes. An optician had given her spheres of "— 2 D. Sph. to wear some time before she came to me for advice. "The most serious cases of all, however, are those important ones "of albuminuric retinitis. It is a well-known fact, and one that I "can corroborate, that a patient with this affection comes occas- "ionally into the ophthalmic surgeon's hands first of all, and that "he will later, within a few months of his death, assert that his "general health is excellent. I have known such cases to apply "to the optician for glasses, and to have thus lost the only

" chance of prolonging life which an early recognition of the " preceding arterio-sclerotic changes would have given."

* * * *

Optical Philanthropy.

WE recently noted the fact that Mr. James Coats, of Paisley, had sent an optician through the Highlands of Scotland for the purpose of providing those with defective sight with spectacles gratuitously. Dr. A. Rudolf Galloway now throws a little more light on the subject in the following words: " In September of " this year a well-known philanthropist employed a Paisley " optician to examine the inhabitants of a parish not thirty " miles from Aberdeen and on the direct mail route to the " North. This energetic individual succeeded not only in " examining eighty of the parishioners in three hours, but also in " fitting up and giving them glasses. While admiring the " philanthropy of the donor, one cannot but regret it was " not accompanied by more knowledge and judgment."

* * * *

Ophthalmia Neonatorum in Aberdeen.

FROM Dr. Galloway's address we gather that the infant department of the Aberdeen Blind Asylum has been closed, since no suitable cases of blindness from the district are now forthcoming to justify its retention. This satisfactory state of things is due to the increasing employment of the Credé prophylaxis in maternity cases, together with the prompt treatment of such cases of ophthalmia neonatorum as do occur. As evidences of the recent diminution of that disorder in Aberdeen, Dr. Galloway states that he has now to treat only one case, where formerly he treated ten; that during the last two summer sessions of three months each, he was unable to show his students a typical case; and, finally, that for the year ended 30th June, 1907, out of a total number of 4,816 new cases treated at the Eye Institution, there were 12 cases only of ophthalmia neonatorum, and that in one eye alone did serious damage result.

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Bradford Royal Eye and Ear Hospital.

THE Bradford Royal Eye and Ear Hospital celebrated its Jubilee on 18th October last, when some seven hundred guests, under the presidency of the Lord Mayor of the city, assembled to do honour to the occasion. The hospital was founded by the late Dr. Edward Bronner, father of Dr. Adolf Bronner, present surgeon to the institution.

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International Congress of Ophthalmology.

THE XI International Congress of Ophthalmology will assemble at Naples in the Spring of 1909. Professor Angelucci is the President of the Committee of Organisation. The bureau is R. Clinica Oculistica, St. Andrea delle Dame, Naples. The correspondents for the United Kingdom are: for England, Mr. Walter H. Jessop; for Scotland, Dr. George Mackay; and for Ireland, Sir H. R. Swanzy.

* * * *

Dr. C. A. Oliver.

READERS will be sorry to learn that Dr. C. A. Oliver, of Philadelphia, Pa., U.S.A., the Associate Editor of THE OPHTHALMOSCOPE, has been driven to winter in California owing to an attack of intestinal gout.

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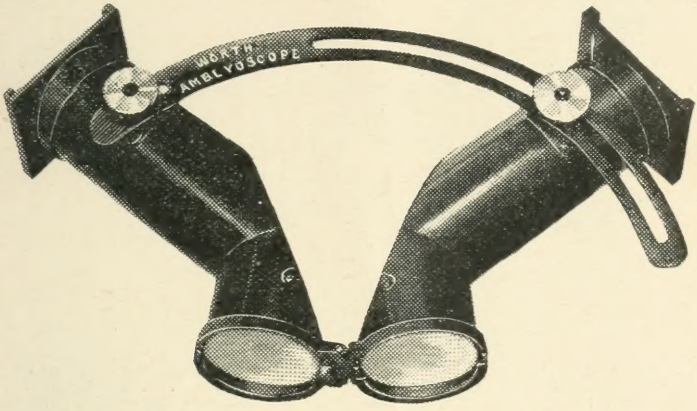

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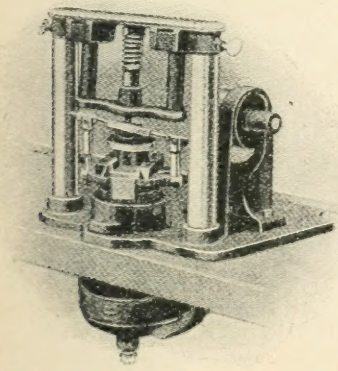

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